RESEARCH MEANS BUSINESS

A DIRECTORY OF COMPANIES BUILT ON NSERC-SUPPORTED UNIVERSITY RESEARCH

NSERC CRSNG

Investing in people, discovery and innovation

Canada

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350 Albert Street
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NSERC is Canada's instrument for promoting and supporting university research in the natural sciences and engineering, other than the health sciences.

NSERC supports both basic university research through research grants and project research through partnerships of universities with industry, as well as the advanced training of highly qualified people in both areas.

November 1999

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Legasys	Ontario	58
Les entreprises GIRO	Quebec	59
MacDonald Dettwiler and Associates	British Columbia	60
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Mycota Biosciences	Quebec	65
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Platform Computing	Ontario	78
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Qubit Systems	Ontario	85
Raylo Chemicals	Alberta	86
Real Numerix	Quebec	87
Right Track CAD	Ontario	88
Satlantic	Nova Scotia	89
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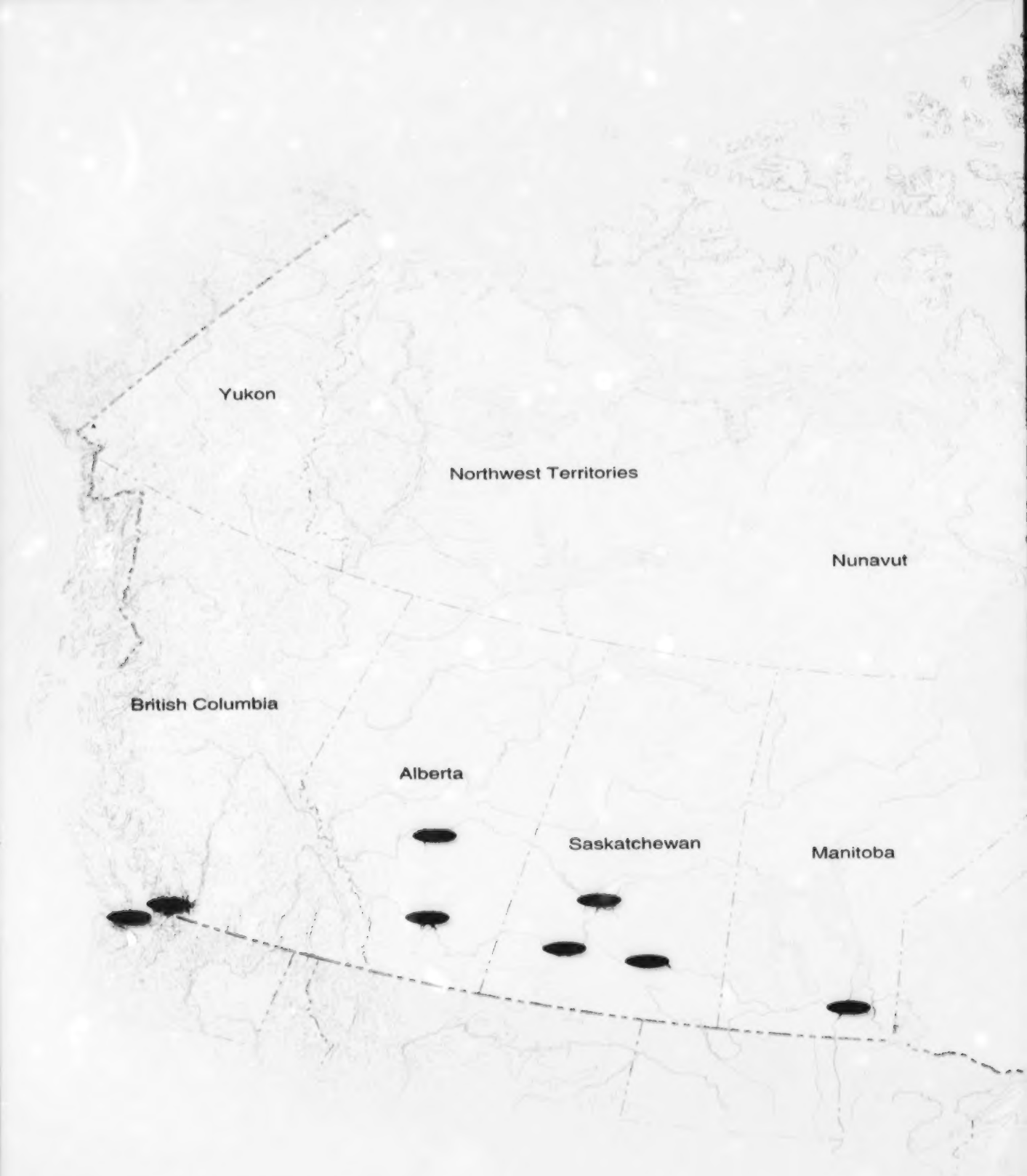
Universal Systems	New Brunswick	102
Venmar CES (fka Conservation Energy Systems)	Saskatchewan	103
Virtek Vision International	Ontario	104
Vortek Industries	British Columbia	105
Waterloo Maple	Ontario	106
WaveCom Electronics	Saskatchewan	107
Wavemakers Research	British Columbia	108
Westport Innovations	British Columbia	109
Wi-LAN	Alberta	110
ZENON Environmental	Ontario	111



Locations of start-up companies.

Labrador
Newfoundland
Ontario
Quebec
P.E.I.
Nova Scotia
New Brunswick
L. Superior
L. Huron
L. Erie
L. Ontario

PREFACE

This book is about innovation. It profiles more than one hundred "start-up" companies, most of which started out as ideas in the minds of university researchers. These companies vary in shape and size and operate in widely different industries, from aerospace to pharmaceuticals, and from information technology to agriculture. But for all their diversity, they share a common characteristic: roots in university research funded by NSERC.

We don't know how many such companies there are all told, but the one hundred and eleven profiled here have created more than 7,500 jobs and nearly $1.3 billion in revenue annually. Several of the companies have gone public and there are similar new ones forming all the time. These companies and the process they exemplify are basic to Canada's prosperity.

For more than twenty years, NSERC has been making investments in university research in a variety of ways. Many of the companies described here grew out of NSERC grants for basic research. Frequently it's this kind of research that leads to the really radical discoveries and innovations that become new technologies. Generating new knowledge and skills is the surest means to ensure sustainable job creation.

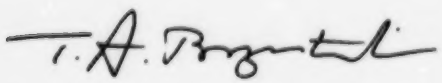
There are other avenues for technology transfer that NSERC funds. We have a dozen Research Partnerships programs that bring university researchers and industry together to solve problems that matter to both scientists and industry. To date, a thousand companies, including two-thirds of the Globe and Mail's list of top 50 Canadian R&D companies, have taken advantage of these programs.

Established companies and start-ups alike need skilled workers — people who are highly qualified in the science and engineering fields. We've helped more than 50,000 young Canadians get their master's and doctoral degrees through NSERC scholarships and fellowships. Some of these talented young people go on to start up their own businesses. While this book is mainly about the work of university faculty members, we've included some examples of student-inspired companies, and they are amongst the most interesting and successful.

As we track the return on NSERC's investment in research grants, partnerships and training, it becomes clear that university research has an essential role to play in the prosperity and well-being of all Canadians. The companies profiled in this book represent one way that university innovation finds its way into our national economic and social landscape. Through the work of these entrepreneurs, NSERC's vision for the 21st century is put into action.

We see our people working at rewarding and meaningful jobs because they have the skills and knowledge to create value and meet needs in the global economy. We see our scientists and engineers respected throughout the world because of their leading-edge discoveries and trailblazing projects. We see our industries thriving because business is taking full advantage of the nation's capacity for science-based innovation. And we see NSERC playing a leading role in making all this happen....by investing in people, discovery and innovation.

For more information on any of NSERC's programs, please consult our Web site, at www.nserc.ca, or call (613) 995-1111.



Thomas A. Brzustowski
President

INTRODUCTION

One of the more tangible outcomes of NSERC-funded research is the creation of a company. The "spin-off" companies highlighted in this report have all been started from the results of research partially funded by NSERC. The 111 spin-off companies featured in this booklet are located in nine provinces. They range in size from new start-ups with only three employees to well-established firms with hundreds of workers. The companies are active in most economic sectors and produce goods and services that have a large impact on the Canadian economy.

The number of employees and annual sales/revenue figures by province are shown in Table 1. Together, these companies employ more than 7,500 Canadians and generate close to $1.3 billion in annual sales/revenue. Table 2 presents a summary by province of key company facts, and indicates the page number for each company.

Unless otherwise indicated, all figures are accurate for October 1998.

Table 1: Spin-off Companies by Province

Province	No. of Companies	No. of Employees	Annual Revenue ($millions)[1]
British Columbia	23	2,370	279.2
Alberta	10	619	72.2
Saskatchewan	7	698	92.5
Manitoba	2	6	0.2
Ontario	39	2,540	466.1
Quebec	18	920	341.0
New Brunswick	2	98	12.8
Nova Scotia	7	244	29.2
Newfoundland	3	47	5.7
Total	**111**	**7,542**	**$1,298.9**

1. Includes estimate for companies reporting confidential revenue figures.

Table 2: Spin-off Companies

Province/Company	Year Incorporated	No. of Employees	Annual Sales/ Revenue ($millions)	Principal Markets	Page Number
British Columbia					
Albacore Research	1991	6	0.3	International	4
Assistive Listening Device Systems	1990	7	Confidential	International	8
Aurora Instruments	1990	Confidential	Confidential	International	9
Barrodale Computing Services	1978	11	Confidential	North America	10
Brooks Automation Software (fka Techware)	1983	100	14.6[1]	U.S./ International	17
Credo Interactive	1990	13	Confidential	North America, Europe, Japan	23
CTF Systems	1970	60	Confidential	Japan, Europe, North America	24
Dewey McMillin & Associates	1988	5	0.2	North America, Europe	29
Forbes Medi-Tech	1993	34	6.0	North America, Europe	41
IGT Pharma	1992	13	Confidential	International	49
Kinetic Sciences	1991	8	1.1	North America	57
MacDonald Dettwiler and Associates	1969	1400	142.0[2]	International	60
MycoLogic	1994	7	Confidential	North America	64
NEC Moli Energy	1990	350	Confidential	Asia, North America	66
Phero Tech	1982	22	Confidential	The Americas, Europe, Australia, N.Z.	75
Process Simulations	1994	5	0.6	North America, Europe	80
QLT PhotoTherapeutics	1981	175	5.2	Canada, U.S., Western Europe	82
Quantum Technology	1981	6	1.0	International	84
TerraGen Diversity	1996	34	Confidential	International	98
TIR Systems	1982	25	4.0	North America, Europe, Asia	100
Vortek Industries	1976	25	Confidential	International	105
Wavemakers Research	1993	9	Confidential	International	108
Westport Innovations	1994	55	Confidential	North and South America, Europe, Asia	109
Alberta					
BIOMIRA	1985	160	13.0	International	12
Boreal Laser	1987	5	Confidential	Canada, U.S, Europe, Australia, N.Z, Russia	16
Cell-Loc	1996	20	Confidential	International, Canada, U.S.	18
D.B. Robinson and Associates	1976	56	7.5	International	25

Table 2: Spin-off Companies *(continued)*

Province/Company	Year Incorporated	No. of Employees	Annual Sales/ Revenue ($millions)	Principal Markets	Page Number
Alberta *(continued)*					
Harding Instrument Company	1969	41	4.0	North America	44
Hycal Energy Research Laboratories	1976	40	5.5	International , Domestic	47
ITRES Research	1979	35	3.5	International	55
Raylo Chemicals	1962	175	25.0	U.S., Western Europe	86
SemBioSys Genetics	1994	22	Confidential	International	92
Wi-LAN	1992	65	5.3	International	110
Saskatchewan					
BIOSTAR	1983	32	2.6	Northern Hemisphere	15
DEL-AIR Systems	1981	100	10.0	North America, Korea, Europe, Australia	27
Droycon Bioconcepts	1987	8	Confidential	U.S., Australia, Europe	31
SCI-TEC Instruments	1981	93	14.0	International	90
SED Systems	1972	250	40.0	International	91
Venmar CES (fka Conservation Energy Systems)	1980	60	Confidential	North America	103
WaveCom Electronics	1988	155	14.1	International	107
Manitoba					
Quantic Laboratories	1993	Confidential	Confidential	Confidential	83
Sysmon	1992	6	0.2	North America, India	96
Ontario					
Apollo Environmental Systems	1988	6	Confidential	North America	5
ASK Science Products	1994	4	Confidential	International	7
Biorem Technologies	1990	7	1.2	North America	13
Certicom (fka Mobius Encryption)	1985	95	0.8[3]	International	19
Cosma Powerlasers	1976	40	Confidential	Confidential	22
DALSA	1980	195	27.0	U.S., Europe, Asia	26
Diffracto	1971	33	3.6	North America, Europe, Asia	30
Dynacon Enterprises	1980	20	1.5	North America	32
E-TEK ElectroPhotonics Solutions	1993	51	Confidential	Canada, Europe, Japan	33
Elstat	1972	5	0.2	North America	34
Engineering Seismology Group	1993	18	Confidential	International	36
Ensyn Technologies	1991	30	Confidential	North America, Europe	37
EnviroMetal Technologies	1992	5	1.5	International	38
ESTCO Energy	1995	9	Confidential	North America	39

Table 2: Spin-off Companies *(continued)*

Province/Company	Year Incorporated	No. of Employees	Annual Sales/ Revenue ($millions)	Principal Markets	Page Number
Ontario *(continued)*					
Gensel	1995	5	Confidential	International	42
Honeywell Hi-Spec Solutions (fka SACDA)	1985	130	Confidential	Confidential	46
Hydromantis	1985	14	1.5	North America, Europe, Japan, Korea	48
Imaging Research	1986	38	Confidential	International	50
Innova Technologies	1992	30	10.0[4]	International	52
Inverpower Controls	1980	175	18.9	North America, Europe, Asia Pacific	54
Legasys	1995	21	Confidential	International	58
MDS SCIEX (fka SCIEX)	1974	320	81.0	International	62
Millenium Biologix	1992	12	1.3	International	63
New Orbit Technologies	1988	3	0.4	Canada	68
Open Text	1991	140	67.2	International	72
Optech	1974, 1986	90	Confidential	International	73
Performance Plants	1995	28	Confidential	North America	74
Philips Analytical (fka Waterloo Scientific)	1983	31	Confidential	Canada, U.S., Europe, Japan	76
Platform Computing	1992	60	20.0	North America, Europe, Asia	78
Polyphalt	1992	15	Confidential	International	79
Qubit Systems	1995	6	Confidential	Confidential	85
Right Track CAD	1998	10	2.0	International	88
SMT HydraSil	1996	10	Confidential	North America	93
Stantec Consulting (fka Pavement Management Systems)	1978	80	10.0	North America, International	94
Sybase Waterloo (fka Watcom International)	1981	230	Confidential	International	95
TurboSonic (fka Turbotak)	1976	22	4.1	North America	101
Virtek Vision International	1986	52	7.5	North America, Europe, Pacific Rim	104
Waterloo Maple	1984	100	Confidential	International	106
ZENON Environmental	1980	400	58.0	International	111

Table 2: Spin-off Companies *(continued)*

Province/Company	Year Incorporated	No. of Employees	Annual Sales/ Revenue ($millions)	Principal Markets	Page Number
Quebec					
AD OPT Technologies	1987	60	5.6	North America, Western Europe	1
Advitech Solutions	1995	25	1.5	International	2
BioChem Pharma	1986	438	280.8[5]	International	11
Bios Agriculture	1996	10	Confidential	North America, Brazil, Argentina, China	14
Comlab	1984	22	1.2	Canada	20
Cosem Neurostim	1987	Confidential	Confidential	International	21
Dephy Technologies	1989, 1994	10	Confidential	International	28
HexaVision Technologies	1995	35	1.0[4]	International	45
Infolytica	1978	24	Confidential	International	51
INRO Consultants	1976	23	3.2	International	53
Kemestrie	1992	18	Confidential	North and South America, Europe	56
Les entreprises GIRO	1979	120	13.8[4]	International	59
Mycota Biosciences	1999	10	Confidential	International	65
NéoKimia	1996	18	Confidential	International	67
Nexia Biotechnologies	1993	38	Confidential	Domestic, International	69
Pyrovac International	1990	45	Confidential	International	81
Real Numerix	1996	6	Confidential	North and South America, Europe	87
Tekna Plasma Systèmes	1990	18	Confidential	International	97
New Brunswick					
EM Technologies	1987	28	Confidential	North America	35
Universal Systems	1979	70	8.0[4]	International	102
Nova Scotia					
Applied Microelectronics	1981	50	5.0	North America	6
Focal Technologies	1983	80	13.0	International	40
MathResources	1996	8	Confidential	International	61
Ocean Nutrition Canada (fka LAER Products)	1987	29	Confidential	North America, Asia	71
Pictorius	1995	30	1.5	North America, Europe, Asia	77
Satlantic	1990	40	2.5	International	89
Thermo Dynamics	1981	7	0.8	International	99

Table 2: Spin-off Companies *(continued)*

Province/Company	Year Incorporated	No. of Employees	Annual Sales/ Revenue ($millions)	Principal Markets	Page Number
Newfoundland					
A/F Protein Canada	1994	10	Confidential	International	3
Guigné International	1989	30	2.8	International	43
Northern Radar	1986	7	Confidential	International	70
TOTAL	**111**	**7,542**	**$1,298.9**[6]		

1. 1997
2. 1999 (preliminary)
3. Fiscal year 1998
4. 1998 (preliminary)
5. December 1997
6. Includes estimate for companies reporting revenue as "Confidential."

AD OPT Technologies Inc.

Chief Executive Officer
Thomas Ivaskiv

Address
3535 Queen Mary Road, Suite 650
Montreal, Quebec
H3V 1H8

Telephone
(514) 345-0580

Fax
(514) 345-0422

Email
mktg@adopt.qc.ca

Annual Revenue
$5,600,000 (1997)

Number of Employees in Canada
60

Year Incorporated
1987

Principal Markets
North America, Western Europe

Industrial Sector
Transportation, Scheduling, Logistics

Web Site
www.adopt.qc.ca

Product or Service

AD OPT Technologies Inc. is a Montreal-based software company that was founded in 1987. The company has developed various commercial products based on an optimization system known as GENCOL, which was originally developed by a team of researchers from the Université de Montréal's École des hautes études commerciales and École Polytechnique. The products developed around GENCOL are known as the Altitude™ suite of products, which are targeted for use amongst the major airlines of the world. Altitude products are used to optimize the scheduling of flights, as well as the pilots and crews for the flights. By utilizing the GENCOL optimizer (which is a very advanced algorithm) the scheduling process is subjected to mathematical scrutiny to determine the most cost-effective solution, taking into account all constraints (practical and imposed) in determining the solution. Savings of up to 15% of operating costs have been realized using these systems. Considering that operating budgets are in the multi-billion dollar range, these savings are quite considerable. The company has successfully won contracts with Federal Express, UPS, TWA, Northwest Airlines, Air Canada and Air Transat, to name a few.

ShiftLogic™, another software developed by AD OPT, is a powerful shift scheduling and management tool. ShiftLogic provides the means to produce and evaluate a wide variety of schedules. Specialized optimizers reduce operating costs by scheduling the right number of employees at the right times, minimizing overstaffing and overtime. Clients for ShiftLogic include NavCanada, Eurocontrol, and the Federal Aviation Administration (FAA), among others.

NSERC Researcher

GENCOL software is the result of work done by researchers in the Groupe d'études et de recherche en analyse des décisions (GERAD). GERAD is an interuniversity centre, grouping Montreal's École des hautes études commerciales (HEC), École Polytechnique, McGill University, and the Université de Quebec à Montréal. On the team are Drs. Jacques Desrosiers and François Soumis. Dr. Desrosiers is a professor of the Management of Quantitative Methods at HEC. Dr. Soumis is a former director of GERAD and a professor of Applied Mathematics at École Polytechnique. They receive NSERC research, collaborative research and development, and equipment grants. In 1997, AD OPT was recognized by NSERC and The Conference Board of Canada with a University-Industry Synergy R&D Partnerships Award.

Advitech Solutions Inc.

Chief Executive Officer
Renaud Beauchesne

Address
650 Père-Lelièvre Boulevard, Suite 170
Vanier, Quebec
G1M 3T2

Telephone
(418) 686-7498

Fax
(418) 686-2446

Email
advitech@quebectel.com

Annual Revenue
$1,500,000

Number of Employees in Canada
25

Year Incorporated
1995

Principal Markets
International

Industrial Sector
Pharmaceuticals and Food

Web Site
www.advitech.com

Product or Service

Most of us think of milk as a healthy food, but perhaps not as a health food. Advitech Solutions is changing that. The company is commercializing techniques to extract the most valuable ingredients in milk, which have applications in the health foods, pharmaceutical, nutriceutical, and cosmetics industries. Some of the most interesting ingredients Advitech works with are called milk protein hydrolysates. These ingredients form the basis for Advitech's high protein yogurt, currently exported to France, and the company's sports energy drink and high protein supplements, which are under development.

NSERC Researcher

Advitech founders professors Sylvie Gauthier and Yves Pouliot are members of the Centre de recherche en sciences et technologie du lait (STELA) at Université Laval's Département des sciences des aliments et de nutrition. Both Drs. Gauthier and Pouliot are funded by NSERC research grants. Dr. Gauthier is a member of Dr. Christophe Lacroix's Research Network for High Value Milk Ingredients.

A/F Protein Canada Inc.

Chief Executive Officer
Dr. Garth L. Fletcher

Address
20 Hallett Crescent
PO Box 21233
St. John's, Newfoundland
A1A 5B2

Telephone
(709) 738-4638

Fax
(709) 738-4644

Email
afpcan@avint.net

Annual Revenue
Confidential

Number of Employees in Canada
10

Year Incorporated
1994

Principal Markets
International

Industrial Sector
Aquaculture, Pharmaceuticals, Food

Web Site
www.afprotein.com

Product or Service

A/F Protein Canada Inc. is the world's only commercial producer of antifreeze proteins. The company extracts and purifies four varieties of antifreeze proteins and glycoproteins from the blood plasma of a variety of fish inhabiting the freezing North Atlantic Ocean. The ability of these proteins to depress the freezing temperature, modify or suppress ice crystal growth, inhibit ice recrystallization and protect cell membranes from cold-induced damage can provide important benefits to the medical, veterinary, aquaculture and food industries. Antifreeze applications in medical/veterinary fields include the cryopreservation of eggs, sperm, and embryos. Research is also under way to find a way to use these proteins to help preserve organs for human transplant. Antifreeze proteins used in conjunction with cryosurgery can help to destroy malignant tumours. The antifreeze proteins and their genes can also be used to produce transgenic fish and plants. Because of the unique ability of the antifreeze proteins to inhibit recrystallization, the food industry is interested in using the proteins to improve the texture of frozen foods. A/F Protein Canada's Aqua Bounty Farms division is developing rapidly growing transgenic broodstocks of Atlantic salmon and rainbow trout that contain a patented chimeric "all fish" gene construct, consisting of an antifreeze gene promoter linked to a salmon growth hormone gene. These fish grow 4–10 times faster than standard salmon during their first year, and are capable of reducing the time to market size by a year. This transgenic technology is also being applied to other species, such as tilapia and marine flatfish. A/F Protein Canada, which is a subsidiary of A/F Protein Inc., Waltham, Massachusetts, has operations in Newfoundland and Prince Edward Island.

NSERC Researcher

A/F Protein and its subsidiaries were founded to commercialize the discoveries of Drs. Garth Fletcher and Choy Hew. Dr. Fletcher is a professor in the Ocean Sciences Centre at Memorial University of Newfoundland. Dr. Hew is a professor of clinical biochemistry at the Banting Institute of the University of Toronto and the Hospital for Sick Children. Both Drs. Fletcher and Hew receive NSERC research and strategic project grants.

ALBACORE RESEARCH LTD.

CHIEF EXECUTIVE OFFICER
Rolf Oetter

ADDRESS
4196 Kashtan Place
Victoria, British Columbia
V8X 4L7

TELEPHONE
(250) 479-3638

FAX
(250) 479-0868

EMAIL
albacore@direct.ca

ANNUAL REVENUE
$300,000 (1995)

NUMBER OF EMPLOYEES IN CANADA
6

YEAR INCORPORATED
1991

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Manufacturing, Marine Technologies

WEB SITE
www.albacoreresearch.com

PRODUCT OR SERVICE

When shipbuilders need help, many of them turn to British Columbia's Albacore Research Ltd. The company designs advanced computer software for the shipbuilding industry, specializing in fairing, lofting, ship production and conversion of CAD drawings to numeric code (NC) for automatic control of cutting machines. It is a spin-off of research done at the University of Victoria in the mid-1980s. Albacore software is used by shipbuilders throughout Canada, the U.S., Asia, and Europe.

NSERC RESEARCHER

Albacore Research was founded by Geoff Vickers, a professor of mechanical engineering and Director of CAD/CAM and Robotics at the University of Victoria. Dr. Vickers' research on robotics in the shipbuilding industry was supported by an NSERC research grant. His current research on manufacturing robotics and computer-optimized milling of dies and moulds is supported by NSERC research, strategic, equipment, and collaborative project grants.

Apollo Environmental Systems Corporation

Chief Executive Officer
Peter S. Walton

Address
270 Yorkland Boulevard
Suite 150
North York, Ontario
M2J 5C9

Telephone
(416) 491-1441

Fax
(416) 491-1417

Email
apollo@netrover.com

Annual Revenue
Confidential

Number of Employees in Canada
6

Year Incorporated
1988

Principal Markets
North America

Industrial Sector
Environmental Tech, Oil and Gas

Web Site
N/A

Product or Service

Apollo Environmental Systems Corp. offers highly effective low-cost processes, equipment, and associated services for the removal of hydrogen sulphide gas from gas streams and from aqueous and liquid sulphur media. Hydrogen sulphide occurs as a result of many industrial processes; it also occurs in natural gas and in municipal wastewater treatment plant digester gas. It is highly toxic, forms explosive mixtures with air, and has an offensive odour. Apollo's processes are able to reduce the hydrogen sulphide content of gas streams to below one part per million in a rapid and very cost-effective manner. Its process for removing hydrogen sulphide from liquid sulphur, jointly developed with its technology licensee, Enersul Inc. of Calgary, is setting a new world standard; the first commercial unit of this type has been operating at the Edson, Alberta, plant of Talisman Energy since late 1994. The company is now commercializing its other processes, all of which are based on technology invented at the University of Toronto.

NSERC Researcher

The inventor of the Apollo system is chemical engineering professor James Smith from the University of Toronto. Dr. Smith's research on the movement and treatment of gases was supported by NSERC research grants.

Applied Microelectronics Inc.

Chief Executive Officer
Dr. Douglas Pincock

Address
1046 Barrington Street
Halifax, Nova Scotia
B3H 2R1

Telephone
(902) 421-1250

Fax
(902) 429-9983

Email
info@appliedmicro.ns.ca

Annual Revenue
$5,000,000

Number of Employees in Canada
50

Year Incorporated
1981

Principal Markets
North America

Industrial Sector
Electronics, Aerospace, Telecommunications

Web Site
www.appliedmicro.ns.ca

Product or Service

Applied Microelectronics Inc. is an established leader in electronic design and development. A privately held corporation with over 75% ownership held by employees, the company's experienced design teams have been providing economical turnkey designs for industry leading firms for 17 years. Applied Microelectronics offers advanced hardware and software design and development services focused on Integrated Circuits (ASIC/FPGAs) and Embedded Systems technologies. The company's client list includes AlliedSignal Inc., Lockheed Martin Canada, Spar Aerospace, DY4 Systems Inc., Nortel Semiconductors, Newbridge Networks Corp., and COM DEV International.

NSERC Researcher

Applied Microelectronics was founded by Dr. Douglas Pincock, a former professor of electrical engineering at the Technical University of Nova Scotia, now known as DalTech. Dr. Pincock's research on underwater telemetry was supported by NSERC through research and equipment grants.

ASK Science Products Inc.

Chief Executive Officer
Kevin Firth

Address
102 Barrie Street
Kingston, Ontario
K7L 3J9

Telephone
(613) 545-3794

Fax
(613) 545-0514

Email
info@askscience.com

Annual Revenue
Confidential

Number of Employees in Canada
4

Year Incorporated
1994

Principal Markets
International

Industrial Sector
Scientific Instrumentation

Web Site
www.askscience.com

Product or Service

Biology research labs are gaining substantial time and cost savings by using technology developed at Queen's University and marketed by spin-off company ASK Science Products Inc. The procedure is called electroporation in situ. It opens temporary pores in the cell walls that allow passage of nonpermeant molecules, thus avoiding the tedious microinjection of individual cells to study cell function. By using electroporation, the material can be introduced simultaneously into millions of adherent cells. The process is unique in producing electroporated and non-electroporated cells side by side on the same slide. This provides the best possible control cell evaluation and allows for the study of intercellular gap junctional communication.

NSERC Researcher

The co-founders of ASK Science Products are Queen's University microbiology and immunology professor Leda Raptis and her husband, design engineer Kevin Firth. The development of the electroporation apparatus is a direct result of Dr. Raptis' NSERC strategic grant. Mr. Firth is responsible for the design and construction of the apparatus.

Assistive Listening Device Systems Inc.

Chief Executive Officer
Paul Geyer

Address
2 – 11220 Voyageur Way
Richmond, British Columbia
V6X 3E1

Telephone
(604) 244-0269

Fax
(604) 270-6308

Email
email@alds.com

Annual Revenue
Confidential

Number of Employees in Canada
7

Year Incorporated
1990

Principal Markets
International

Industrial Sector
Medical Devices & Instrumentation

Web Site
www.alds.com

Product or Service

Assistive Listening Device Systems Inc. is improving accessibility and quality of life for hard of hearing, deafened, and deaf people through the design, manufacture, and distribution of unique technologies. Their products include infrared transmitters and receivers, telephone handset testers, a telephone training system for hearing aid and Teletypewriter (TTY) users, and a computerized note-taking system. ALDS transmitters, including the Porta-IR and the Porta-IR Compact, are on the leading edge of portable infrared assistive listening technology, providing a clear and intelligible reproduction of the original sound. The PortaCap is a computerized note-taking and print-interpreting system designed to be easy to use, portable, and affordable. ALDS is continually evaluating new methods and developing innovative devices that help to restore independence to the hearing impaired.

NSERC Researcher

Dr. Charles Laszlo, Chairman of ALDS, founded the company in 1990 with Paul Geyer, its President and CEO. Dr. Laszlo is a professor of electrical engineering at the University of British Columbia, and Mr. Geyer is one of his former students. Dr. Laszlo is also the director of the Institute for Hearing Accessibility Research at the University of British Columbia. He specializes in biomedical signal processing, speech analysis and synthesis. NSERC supports Dr. Laszlo's research through research grants.

Aurora Instruments Ltd.

Chief Executive Officer
Dr. Dong C. Liang

Address
1001 East Pender Street
Vancouver, British Columbia
V6A 1W2

Telephone
(604) 215-8700

Fax
(604) 215-9700

Email
aurora@aurora-instr.com

Annual Revenue
Confidential

Number of Employees in Canada
Confidential

Year Incorporated
1990

Principal Markets
International

Industrial Sector
Manufacturing Equipment

Web Site
www.aurora-instr.com

Product or Service

Aurora Instruments Ltd. specializes in the development, production, and sale of atomic absorption spectrometers and other analytical instruments. Aurora's products have appeared in a number of journal articles and on the cover of such publications as Spectroscopy, since the debut of its patented Capacitively Coupled Plasma source at Chicago's 1991 Pittcon conference. Aurora's AI 1100 and 2100 Atomic Absorption/Plasma Emission Spectrometers feature unmatched performance, outstanding durability, a 3-D autosampler, powerful Windows-based software and unique applications. Aurora's diverse product line can cover an entire laboratory's needs in elemental analysis, including environmental, mining, metallurgical, semiconductor, food, educational, medical, energy, utility, and agricultural laboratories.

Using NSERC funding, Dr. Liang developed Aurora Instruments' Capacitively Coupled Plasma source. CCP combines the merits of GFAAS (Graphite Furnace Atomic Absorption Spectrometry) and ICP-AES (Inductively Coupled Plasma-Atomic Emission Spectroscopy) to produce a highly sensitive yet cost effective method of analysis.

NSERC Researcher

The co-founders of Aurora Instruments Inc. are Dr. Dong Liang and chemistry professor Michael Blades from the University of British Columbia. Dr. Liang has more than 25 years experience in the analytical instrumentation industry. Dr. Blades is a world expert in the field of analytical instrumentation techniques and acts as a technical advisor to the company. Dr. Blades has received several NSERC research and equipment grants over the past 10 years. His current research involves atomic and molecular spectroscopy of small volume samples.

Barrodale Computing Services Ltd.

Chief Executive Officer
Dr. Ian Barrodale

Address
P.O. Box 3075
Victoria, British Columbia
V8W 3W2

Telephone
(250) 472-4372

Fax
(250) 472-4373

Email
info@barrodale.com

Annual Revenue
Confidential

Number of Employees in Canada
11

Year Incorporated
1978

Principal Markets
North America

Industrial Sector
Information Technology

Web Site
www.barrodale.com

Product or Service

Scientists and engineers across the country are using software from Barrodale Computing Services for the analysis and visualization of scientific data. In addition to marketing IDL software, Barrodale develops its own complementary systems. Currently, BCS software is used in defence science, forestry, hydrology, seismic processing, and aerospace research. Applications include mine countermeasure scenarios, detecting and localizing underwater acoustic sources, discerning changes in pairs of distorted digital images, and designing and managing large spatial databases. The company's recent product, DETECT/NDE, provides for non-destructive evaluation of materials through visualization. Ultrasound images display the interior of the wing of an aircraft, for example, then DETECT/NDE enhances the displays and assists in the analysis of damage or flaws before they become serious problems. Another BCS product is the TerrainWorks DataBlade, which provides an environment for efficient storage, manipulation, and query of spatial geographic data stored in an object-relational database.

NSERC Researcher

Barrodale Computing Services Ltd. was founded by Ian and Sheila Barrodale. Formerly a professor of mathematics and computer sciences at the University of Victoria, Dr. Ian Barrodale specialized in numerical analysis and mathematical software. His research was supported by NSERC through research grants.

BioChem Pharma Inc.

Chief Executive Officer
Jacques Lapointe

Address
275 Armand-Frappier Boulevard
Laval, Quebec
H7V 4A7

Telephone
(450) 681-1744

Fax
(450) 978-7755

Email
corpcom@biochempharma.com

Annual Revenue
$280,782,000 (December 31, 1997)

Number of Employees in Canada
438 (1998)

Year Incorporated
1986

Principal Markets
International

Industrial Sector
Pharmaceuticals

Web Site
www.biochempharma.com

Product or Service

Founded in 1986, BioChem Pharma is an international biopharmaceutical company dedicated to research, development and commercialization of innovative products for the prevention and treatment of human diseases. The Company's high-quality research program focuses primarily on cancer and infectious diseases. BioChem Pharma employs close to 1,000 people, including 300 scientists and researchers, and has state-of-the-art facilities in Canada and the United States.

BioChem Pharma's flagship discovery, lamivudine—commercialized as 3TC® for the treatment of AIDS—is now the most widely prescribed HIV/AIDS treatment in the world. Two years after the discovery of lamivudine in 1988, BioChem Pharma signed a collaborative agreement with Glaxo Wellcome for the development and commercialization of the drug worldwide, except in Canada, where the parties formed a partnership. Lamivudine also has proved effective in treating chronic hepatitis B, and is being introduced to markets around the globe under the trademarks Heptovir® (Canada), Epivir®-HBV™ (U.S.A.) and Zeffix™.

In the vaccines sector, BioChem Pharma's commitment to research and development is reflected by a novel cell-derived nasally-delivered influenza vaccine program, and a recombinant protein-based vaccines program against bacterial diseases.

NSERC Researcher

BioChem Pharma Inc. was jointly founded in 1986 by Dr. Bernard Belleau of McGill University and by two members of the Institut Armand Frappier: Dr. Francesco Bellini, now Chief Executive Officer of BioChem Pharma, and Dr. Gervais Dionne, currently Executive Vice-President, R&D. Dr. Belleau was influential in the establishment of the pharmaceutical industry in Canada. His research was supported by a number of NSERC grants and he held an industrial research chair in pharmaceutical chemistry, co-sponsored by NSERC and the Institut Armand Frappier, from 1986 until his death in 1989.

BIOMIRA Inc.

Chief Executive Officer
Alex McPherson, M.D., Ph.D.

Address
2011 – 94 Street
Edmonton, Alberta
T6N 1H1

Telephone
(403) 450-3761

Fax
(403) 463-0871

Email
bwickson@biomira.com

Annual Revenue
$13,300,000

Number of Employees in Canada
160

Year Incorporated
1985

Principal Markets
International

Industrial Sector
Biotech, Pharmaceuticals, Vaccines, Medicine

Web Site
www.biomira.com

Product or Service

Established in 1985 by two University of Alberta researchers, BIOMIRA Inc. is now one of the largest biotechnology companies in Canada. Biomira is applying its leading technology in immunotherapy and organic chemistry to the development of cancer therapeutics. The company's commitment to the development of products for the treatment of cancer is currently focused on synthetic therapeutic vaccines and innovative strategies for immunotherapy of cancer. Biomira's motto is: We are the Cancer Vaccine People™. Their lead product, THERATOPE vaccine, will enter Phase III trials in the fourth quarter of 1998 for the treatment of women with metastatic breast cancer. Biomira's BLP25 is a MUC1 vaccine currently in Phase I trials at the Cross Cancer Institute in Edmonton. Patients involved in the trial have Stage III and IV lung cancer.

In August 1995, Biomira acquired an American biotechnology company called Oncotherapeutics Inc., now Biomira USA. This subsidiary is located in Cranbury, New Jersey. The flagship technology for Biomira USA is a cytokine called Liposomal IL-2. This technology has application as a vaccine adjuvant or as a stand-alone treatment in various diseases including cancer and infectious diseases such as AIDS. Biomira USA has also developed an idiotypic vaccine which will be used to treat patients with lymphoma. Biomira has just entered into collaboration with Biovector Therapeutics of Toulouse, France, to move this product into clinical trials.

NSERC Researcher

Biomira was co-founded by immunologist Dr. Michael Longenecker and pharmacologist Dr. Antoine Noujaim of the University of Alberta. Dr. Noujaim has been supported through NSERC strategic project grants for his research on radio immunoconjugates, once used in some of Biomira's products.

BIOREM TECHNOLOGIES INC.

CHIEF EXECUTIVE OFFICER
Brian P. Herner

ADDRESS
7496 Wellington Road, unit 34
R.R. #3
Guelph, Ontario
N1H 6H9

TELEPHONE
(519) 767-9100

FAX
(519) 767-1824

EMAIL
biorem@intrnear.com

ANNUAL REVENUE
$1,200,000

NUMBER OF EMPLOYEES IN CANADA
7

YEAR INCORPORATED
1990

PRINCIPAL MARKETS
North America

INDUSTRIAL SECTOR
Environmental Technologies

WEB SITE
www.bioremtechnologies.com

PRODUCT OR SERVICE

A new environmental clean-up company is winning contracts because of its bugs. Biorem Technologies Inc. (BIOREM) uses microbes to reduce contamination levels in toxic material. Called "bioremediation," this process is an inexpensive, environmentally friendly method of handling some low-grade toxic wastes as well as reducing the contamination level of certain high-grade toxic wastes. BIOREM is a spin-off of research done at the University of Waterloo. The company's services include tailoring microbial populations to meet particular waste requirements, as well as feasibility studies to examine time and cost issues for remediation under specific conditions. The principal areas of application have been in the bioremediation of contaminated soils in the plastics and chemicals industry, as well as the design and installation of biofilters for removal of odour from food processing plant air exhaust.

NSERC RESEARCHER

Owen Ward, the founder of BIOREM, has an impressive research record. His accomplishments include an appointment to the NSERC Industrial Research Chair in Microbial Biotechnology, a position he held at the University of Waterloo from 1986 to 1995. Dr. Ward also received support from NSERC strategic and research grants, and a collaborative research and development grant with Allelix Pharmaceuticals, directed at the production of human pharmaceutical proteins by genetic engineering. In 1996, he completed a strategic grant with the University of Alberta to study biodegradation of PCBs. Technologies developed through the university and BIOREM have been successfully applied in bioremediation processes in Ontario and in several states in the U.S.

Bios Agriculture Inc.

Chief Executive Officer
Mr. Pierre Migner

Address
21111 Lakeshore Road
P.O. Box 187, Macdonald College
Sainte-Anne-de-Bellevue, Quebec
H9X 3V9

Telephone
(514) 398-7909

Fax
(514) 398-7616

E-Mail
migner@biosagriculture.com

Annual Revenue
Confidential

Number of Employees in Canada
10

Year Incorporated
1996

Principal Markets
North America, Brazil, Argentina, China

Industrial Sector
Agriculture & Food

Web Site
www.biosagriculture.com

Product or Service

Some people swear that talking to their plants makes the plants thrive. Bios Agriculture Inc. has evidence that for some plants the ability to communicate well is essential for prosperity. While you shouldn't expect to have a witty conversation with your favorite African violet, this kind of communication is helping soybean producers increase their yields by up to 20%.

Normally, a chemical signal from the soybean's roots summons symbiotic bacteria, which send a return signal. This process helps the roots to prepare for and form nodules. These nodules enable the roots to absorb nitrogen from the soil and feed the plant. But in cool temperatures, the root system of the soybean plant has trouble sending out the signal, which is part of the reason why soybeans grown in such northern climates are less productive. But with the Bios treatment, the message is sent out "loud and clear."

Using Bios' proprietary signal material, the message is "amplified," so nitrogen fixation happens earlier and at greater levels. This increases harvests by 10% to 20%. The Bios treatment is easy to apply — farmers just add it to seed innoculants normally used. However, the benefits of the Bios technology aren't limited to yield. It's also environmentally beneficial. The nitrogen-enriched leaves and stems can be tilled into the ground, returning the nitrogen to the soil. When corn is planted following a soybean crop, for example, less fertilizer is required. Not only does this reduce the producer's costs, it also reduces the potential problems associated with the use of nitrogen fertilizer.

NSERC Researcher

The Bios treatment was developed by Dr. Don Smith, a professor of plant science at McGill University's Macdonald College. A plant physiologist, Dr. Smith is involved in the development of good production practices through the study of nitrogen fixation in plants. NSERC supports his work through research, strategic, and collaborative research and development grants.

BIOSTAR

Chief Executive Officer
Dr. S.D. Acres

Address
343 – 111 Research Drive
Saskatoon, Saskatchewan
S7N 3R2

Telephone
(306) 931-7500

Fax
(306) 242-9010

Email
sacres@biostar.ca

Annual Revenue
$2,646,800

Number of Employees in Canada
32

Year Incorporated
1983

Principal Markets
Northern Hemisphere

Industrial Sector
Cancer Therapeutics, Animal Health

Web Site
www.biostar.ca

Product or Service

BIOSTAR is a privately held, growth-stage biopharmaceutical company developing protein-based immunizing agents for humans and animals. The company's products stimulate the immune system, harnessing its therapeutic productivity-enhancing and preventative potential. BIOSTAR's major products are novel immunopharmaceuticals for substantial markets in human cancer therapy, livestock and companion animal health sectors. The company has a leading edge immunopharmaceutical research platform, coupled with the human resources and the corporate experience to gain a significant share of a global US$9B human and animal health market in the next five years:

- Advanced immunopharmaceutical product in FDA-approved clinical trial for humans
- Two immunopharmaceutical products in development for multiple animal species
- BIOWEST Inc., a profitable animal vaccine business
- Technology for Human DNA vaccine and Gene Medicine markets
- A broad patent position on products and production processes
- Strong financial, research and marketing relationships in place
- Experienced management team
- Raised $23.1M in venture capital financing since 1993.

NSERC Researcher

One of BIOSTAR's founding scientists is Dr. Lorne Babiuk, a veterinary medicine professor at the University of Saskatchewan and Director of VIDO. From 1985-1994, Dr. Babiuk held the biotechnology chair at the University of Saskatchewan, a position jointly funded by NSERC and BIOSTAR. Dr. Babiuk and the VIDO team are supported by various NSERC grants, including strategic, research, and collaborative research and development grants.

Dr. Graham Cox, a BIOSTAR project team leader, was supported by an NSERC industrial research fellowship from 1995 to 1997. Dr. Jack Manns, Associate V.P., Immunopharmaceutical Products, was an NSERC senior industrial fellow from 1992 to 1995.

Boreal Laser Inc.

Chief Executive Officer
Jack Ondrack

Address
51127 Range Road, Unit 13
Spruce Grove, Alberta
T7Y 1A8

Telephone
(780) 987-4382

Fax
(780) 987-2418

Email
info@boreal-laser.com

Annual Revenue
Confidential

Number of Employees in Canada
5

Year Incorporated
1987

Principal Markets
Canada, U.S., Europe, Australia, N.Z., Russia

Industrial Sector
Sensing & Detecting, Energy, Environmental Technologies

Web Site
www.boreal-laser.com

Product or Service

Boreal makes laser-based gas detectors, portable or fixed, for methane, carbon dioxide, ammonia, hydrogen fluoride, hydrogen sulphide, hydrogen cyanide and other gases. Novel technology (U.S. patent 5,637,872 and others) permits these detectors to be remarkably small and inexpensive. Applications include leak detection, process control and monitoring of emissions in upstream oil and gas facilities, refineries, aluminium smelters, fertilizer plants, power plants, mines and agricultural operations. Boreal also provides, ultra-fast response methane detectors for detecting gas pipeline leaks from aircraft. Using CO_2, CH_4 or N_2O measurements, simultaneous meteorological data and the EPA's ISCST3 model (for example), Boreal provides greenhouse gas emission determinations for industry, in many instances replacing estimates subject to very large errors. At the December 1997 Kyoto conference, Boreal measured methane emissions from the Environment Canada booth. This exposure led to Boreal measuring emissions abroad for foreign companies interested in trading greenhouse gas credits.

NSERC Researcher

Electrical engineering professor John Tulip is a founder of Boreal Laser. His research at the University of Alberta has been supported by NSERC through research, strategic, and infrastructure grants.

Brooks Automation Software Corp. (fka Techware Systems)

Chief Executive Officer
Michael Hanssmann
(Software Technologies Director)

Address
100 – 13777 Commerce Parkway
Richmond, British Columbia
V6V 2X3

Telephone
(604) 214-5000

Fax
(604) 214-5001

Email
michael_hanssmann
@brookssoftware.com

Annual Revenue
$14,600,000 (1997)

Number of Employees in Canada
100

Year Incorporated
1983

Principal Markets
USA/International

Industrial Sector
Manufacturing Equipment

Web Site
www.brooks.com

Product or Service

Brooks Automation Software Corp. is a subsidiary of Brooks Automation Inc. of Chelmsford, MA, and the leading supplier of equipment control solutions to the semiconductor industry. With over 1,500 installations worldwide and 15 years of field-proven experience working with R&D, production, and equipment manufacturing facilities, Brooks Automation Software is dedicated to providing low-risk, dependable control solutions.

Brooks Automation Inc. is an independent supplier of substrate material handling robots, modules, software controls and fully integrated cluster tool platforms to semiconductor, flat panel display and data storage manufacturers worldwide. Founded in 1978, the Company has distinguished itself as a technology and market leader, particularly in the demanding cluster tool vacuum-processing environment. By working with and focusing on increasing the productivity of their customers' device fabrication equipment, the Company has been able to set and constantly upgrade industry substrate material handling, thermal conditioning and software controls standards. In addition to corporate facilities in Chelmsford, Massachusetts, Brooks Automation maintains a software subsidiary in Richmond, British Columbia, as well as sales and service offices located in the United States, Europe, Japan, Korea, and Taiwan.

NSERC Researcher

Brooks Automation Software Corp. originally known as Techware Systems, was spun-off by Richard McMahon from research conducted in the engineering physics lab at the University of British Columbia. Mr. McMahon designed the original control system for his master's thesis, which was was supervised by Dr. Robert Parsons, a physics professor specializing in materials testing and coatings. Dr. Parsons received a project research applicable in industry grant (forerunner to the collaborative research and development grant) in part to develop a prototype controller. Mr. McMahon was supported by this grant to continue the technical research. He also received an NSERC postgraduate scholarship while undertaking his master's degree. Dr. Parsons receives NSERC support through research, equipment and university-industry grants. Brooks Automation Inc. (U.S.) acquired Techware in 1996.

CELL-LOC INC.

CHIEF EXECUTIVE OFFICER
Dr. Michel Fattouche
(President)

ADDRESS
207, 12 Manning Close N.E.
Calgary, Alberta
T2E 7N6

TELEPHONE
(403) 569-0760

FAX
(403) 569-0762

EMAIL
info@cell-loc.com

ANNUAL REVENUE
Confidential

NUMBER OF EMPLOYEES IN CANADA
20

YEAR INCORPORATED
1996

PRINCIPAL MARKETS
International, Canada, U.S.

INDUSTRIAL SECTOR
Communications, Safety Devices

WEB SITE
www.cell-loc.com

PRODUCT OR SERVICE

Cell-Loc Inc. is improving safety for cell phone users. Most new cell phones are bought for safety reasons, but cell phones only offer a partial solution. Emergency calls from cell phones cannot be traced to an exact location, unlike those from regular phones. For example, if you use your cell phone to report a car accident on the highway, unless you're sure of your exact location, there may be serious delays getting vital assistance. Cell-Loc's Cellocate™ System has a patented algorithm in its Time Distance of Arrival technology, enabling cell phone carriers to locate the caller's phone quickly. The system compares phone signals received by the nearest base station with signals received by more distant stations. Within four seconds, Cell-Loc pinpoints the caller's location. The system will also help law enforcement officers track stolen phones, criminals, and missing persons. Cellocate™ is scheduled for commercial release by the end of 1998. All wireless 911 calls must be able to be located by 2001, according to new US regulations; Canada is expected to adopt a similar policy. Cell-Loc is well positioned to dominate a market that has been slow to attract competitors. Cell-Loc has also received excellent support from Telus Mobility, a member of Mobility Canada.

NSERC RESEARCHER

Cell-Loc is a spin-off from Wi-LAN, a company set up by Drs. Fattouche and Zaghloul based on their research findings at the University of Calgary's department of electrical and computer engineering. Dr. Fattouche is supported by NSERC grants and Dr. Zaghloul held an NSERC postgraduate scholarship. Cell-Loc has benefited from support from NRC's Industrial Research Assistance Program.

CERTICOM CORPORATION (FKA MOBIUS ENCRYPTION)

CHIEF EXECUTIVE OFFICER
Philip Deck

ADDRESS
200 Matheson Boulevard West,
Suite 103
Mississauga, Ontario
L5R 3L7

TELEPHONE
(905) 507-4220

FAX
(905) 507-3680

EMAIL
info@certicom.com

ANNUAL REVENUE
$812,000 (Fiscal year end 98)

NUMBER OF EMPLOYEES IN CANADA
95

YEAR INCORPORATED
1985

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Information Technologies

WEB SITE
www.certicom.com

PRODUCT OR SERVICE

Certicom Corp. researches, develops, markets and licenses cryptographic technologies to major computing and communications manufacturers to build fast, strong and efficient security into electronic commerce software, smart cards, and wireless applications. Certicom has dedicated more than a decade to researching and developing efficient implementations of elliptic curve cryptography (ECC), which is quickly becoming the security technology of choice for small footprint environments — places where processing power and memory are limited but require fast processing, for example smart cards and wireless devices. An active participant in international standards organizations, Certicom is also a leader in developing ECC standards by IEEE, American National Standards Institute, Internet Engineering Task Force, and others.

In 1998, Certicom acquired Concensus Development Corporation, broadening the company's management and product offerings to include applied security development tools for building Internet, intranet and corporate network applications. Today, Certicom's family of ECC-based offerings is the most comprehensive in the industry, enabling powerful, end-to-end information security at every point within the electronic commerce and communications infrastructure.

Certicom's expanding portfolio of licensees and partners includes market leaders like 3Com/Palm Computing, Cylink, ISS, Infowave Wireless Messaging, Motorola, Pitney Bowes, Sterling Commerce, and VeriFone. Together, Certicom and its partners are establishing Certicom's ECC solutions as the de facto standard for securing every kind of digital communications. Certicom's cryptographic research and product development is based in Mississauga, Ontario, with worldwide sales and marketing operations in San Mateo, California.

NSERC RESEARCHER

Certicom's founders, Drs. Scott Vanstone, Ron Mullin, and Gord Agnew, are researchers at the University of Waterloo and members of the University's Data Encryption Group. Drs. Vanstone and Mullin are professors in the Department of Combinatorics and Optimization, one of the world's largest cryptographic mathematics departments. Dr. Agnew is an electrical and computer engineering professor. Dr. Vanstone is currently the NSERC/Pitney Bowes Chair for the University's new Centre for Applied Cryptographic Research (CACR), an initiative he helped to spearhead with sponsorship from NSERC, Certicom, Pitney Bowes and Communications and Information Technology Ontario. The CACR's mandate is to advance research, research training, university-industry collaboration, and discoveries in the cryptography industry.

COMLAB INC.

CHIEF EXECUTIVE OFFICER
John Ahern

ADDRESS
2300 Léon-Harmel Street
Quebec, Quebec
G1N 4L2

TELEPHONE
(418) 682-3380

FAX
(418) 682-8996

EMAIL
info@comlab.com

ANNUAL REVENUE
$1,200,000

NUMBER OF EMPLOYEES IN CANADA
22

YEAR INCORPORATED
1984

PRINCIPAL MARKETS
Canada

INDUSTRIAL SECTOR
Communications

WEB SITE
www.comlab.com

PRODUCT OR SERVICE

Communication on the Boston green line no. 5 subway system is all-Canadian. In fact, its system was designed by Quebec's Comlab Inc., a company that specializes in communication hardware and software, particularly the design of close-range communication systems. Comlab designed the Boston communication system for Pocatec and Bombardier, major players in the transportaton industries. Comlab also does work for Lab-Volt, Davicom, and Noranda. Other projects include a short-range radar system, vehicular modems, a vehicle tracking system using GPS (the Global Positioning System), and a monitoring and control system for distant radio sites. Comlab also acts as a subcontractor for the Canadian Space Agency.

NSERC RESEARCHER

Comlab Inc. was founded by a team of researchers in the Department of Electrical Engineering at Laval University: Drs. Gilles Delisle and Michel Lecours, and research assistants Marcel Pelletier and John Ahem. Dr. Delisle is currently investigating radar signals and radio frequencies; Dr. Lecours is researching radio communication and signal processing in communication systems. Both researchers are supported by NSERC research grants.

Cosem Neurostim Ltée.

Chief Executive Officer
J.-M. Gauthier, P.Eng

Address
P.O. Box 4070, Terminus Quebec
Quebec, Quebec
G1K 8H5

Telephone
(418) 849-9047

Fax
(418) 849-9160

Email
jgauthie@quebectel.net

Annual Revenue
Confidential

Number of Employees in Canada
Confidential

Year Incorporated
1987

Principal Markets
International

Industrial Sector
Medical Equipment

Web Site
N/A

Product or Service

Cosem Neurostim developed the first Canadian cochlear implant and brought it to market in 1997. The company manufactures cochlear implants and accessories, neurostimulator implants, and microelectrode implants. Cosem Neurostim has experience in summary sound analysis and in the rehabilitation of deaf people equipped with cochlear implants. The company is unique in its ability to rapidly adapt technology to specific patient requirements. Cosem Neurostim ensures that people using these systems have access to dependable advice and assistance by providing distributors and end-users with training in the use, maintenance, and servicing of the technology.

Since the company was founded, Cosem Neurostim and its associates have invested over $10 million in research and development. The company maintains partnerships with Laval University, the University of Sherbrooke, and Hôpital Notre-Dame of Montreal. With export sales making up 95% of their sales, Cosem Neurostim is now seeking to form strategic alliances with foreign countries to increase R&D, penetrate new markets, and acquire or sell new technologies.

NSERC Researcher

The Canadian cochlear implant is the result of collaboration between researchers at Sherbrooke, Toronto, and Carleton universities. The project was initiated in 1979 by François Duval, an electrical engineering professor at the University of Sherbrooke. Dr. Duval is responsible for the development of the speech analyzer. His research has been supported by NSERC through research grants.

Cosma Powerlasers Ltd.

Chief Executive Officer
Brian Morris
(President)

Address
55 Confederation Parkway
Concord, Ontario
L4K 4Y7

Telephone
(905) 761-1525

Fax
(905) 761-1527

Email
N/A

Annual Revenue
Confidential

Number of Employees in Canada
40

Year Incorporated
1976

Principal Markets
Confidential

Industrial Sector
Manufacturing, Automotive

Web Site
www.powerlasers.ca

Product or Service

Reducing cost and weight in automobiles is a way of life for car manufacturers. Cosma Powerlaser's patented technology for the production of laser-welded blanks allows automakers to design weight reduction and cost savings into new vehicles. Laser-welded blanks are two or more pieces of steel or aluminum of different thickness or composition, joined together by laser welding. The laser-welded blank can then be made using traditional methods. Cosma Powerlasers has set the standard in this industry with its patented "fuzzy logic control." The technology guarantees customers quality standards with increased productivity. Cosma Powerlasers technology is highly adaptive, capable of changing parameters in real time. Cosma Powerlasers also perfected the welding of aluminum, a difficult process due to the highly reflective nature of the material. Cosma Powerlasers is regarded as one of the top laser welding suppliers of automotive parts in the world today. Magna International acquired TRIAM Powerlasers (now Cosma Powerlasers) in May 1998.

NSERC Researcher

Powerlasers was established by Dr. Walt Duley, a professor of physics specializing in optics and space and astronomy. Dr. Duley is based at the University of Waterloo, where he receives NSERC support in the form of research and equipment grants.

Credo Interactive Inc.

Chief Executive Officer
Bart Copeland, P.Eng

Address
270 – 8900 Nelson Way
Burnaby, British Columbia
V5A 4W9

Telephone
(604) 291-6717

Fax
(604) 291-7484

Email
info@credo-interactive.com

Annual Revenue
Confidential

Number of Employees in Canada
13

Year Incorporated
1996

Principal Markets
North America, Europe, Japan

Industrial Sector
Software

Web Site
www.credo-interactive.com

Product or Service

Credo Interactive Inc. is a leading developer of 3D movement animation tools for entertainment, education, multimedia and the arts. The underlying technology for the company's unique Life Forms animation software was developed at Simon Fraser University. The software is an animation tool for human figure and character animation, and has also proven to be highly valuable in sports education, choreography, dance, and multimedia content development. Complex motions such as walking and running can be created very easily, and there is support for motion capture data. The Life Forms technology is non-exclusively licensed to other companies for specialized applications of avatars for 3D online environments by Worlds Inc. (USA).

NSERC Researcher

Life Forms software was invented by Tom Calvert and his team of graduate students at Simon Fraser University. This research project was initially a collaboration between Dr. Calvert and dance teacher Catherine Lee, supported by NSERC and SSHRC. Dr. Calvert has received NSERC support through research, infrastructure, and equipment grants. He is now developing intelligent support systems software to take over the more tedious and routine tasks of animation.

CTF Systems Inc.

Chief Executive Officer
Dr. Max Burbank

Address
15 – 1750 McLean Ave.
Port Coquitlam, British Columbia
V3C 1M9

Telephone
(604) 941-8561

Fax
(604) 941-8565

Email
gordonh@ctf.com

Annual Revenue
Confidential

Number of Employees in Canada
60

Year Incorporated
1970

Principal Markets
Japan, Europe, North America

Industrial Sector
Medical Devices and Instrumentation

Web Site
www.ctf.com

Product or Service

CTF Systems Inc. manufactures advanced, whole head magnetoencephalographic and electroencephalographic (MEG/EEG) systems, for use in both clinical and research environments. CTF's most advanced system features 150 MEG and 64 EEG channels, measured simultaneously. Systems have also been built for many other fields of interest including for geophysical and military applications.

Most of the company's products are based on SQUID (superconducting quantum interference device) sensors. These devices detect minute magnetic fields and are particularly useful in brain scanning procedures. Major markets are in Japan, Europe and North America.

MEG, combined with EEG, gives the most precise functional information on the brain's electrophysiology. Unlike other functional brain imaging technologies, MEG systems are completely non-invasive and pose no risk to the patient. MEG may be used for pre-surgical functional mapping, assessment of pathological functional deficits, neuropharmacological investigations, trauma assessment, epileptic assessment, and a growing list of research investigations in neuroscience and psychiatry.

NSERC Researcher

CTF was founded by the Simon Fraser University physics team of Rudolph Haering, Max Burbank, and Randy Lomnes. Dr. Haering received substantial NSERC support before retiring in 1985. Members of the Surface Physics Lab that helped in the research of the technology developed by CTF – Drs. Charles Irwin, Bret Heinrich, and Albert Curzon – also receive NSERC research and equipment grants. CTF has co-sponsored NSERC collaborative research and development projects at the Surface Physics Lab and the Brain Behaviour Lab, where Dr. Harold Weinberg, also an NSERC grantee, has investigated the neuromagnetic functioning of the brain using a whole-head magnetoencephalography (MEG) unit developed by CTF.

D.B. Robinson and Associates Ltd.

Chief Executive Officer
Dr. Fred. D. Otto

Address
9419 – 20th Avenue
Edmonton, Alberta
T6N 1E5

Telephone
(780) 463-8772

Fax
(780) 450-1668

Email
sales@dbra.com

Annual Revenue
$7,500,000

Number of Employees in Canada
56

Year Incorporated
1976

Principal Markets
International

Industrial Sector
Energy

Web Site
www.dbra.com

Product or Service

D.B. Robinson and Associates Ltd. has an international reputation for the supply of fluid property and phase behaviour technology and expertise in the worldwide petroleum production, transportation, and processing industry. The company's specialities — fluid analysis and property measurement of hydrocarbon fluids — reflect the expertise of its founder, Donald B. Robinson, a chemical engineering professor at the University of Alberta. The DBR Group of Companies provide laboratory and research services, design and manufacture of high pressure and temperature laboratory scale equipment, and specialty computer software products for the oil and gas and petrochemical industries. In addition to its Canadian operations, DBR has a Fluid Properties Laboratory in Houston, Texas.

NSERC Researcher

At the University of Alberta, Dr. Robinson conducted research on the thermodynamic properties of petroleum and related materials. Dr. Otto, also a professor of Chemical Engineering, did research on gas-liquid reactions, gas processing and separation processes. Their research was supported by NSERC research and equipment grants.

DALSA Corporation

Chief Executive Officer
Dr. Savvas Chamberlain
(President)

Address
605 McMurray Road
Waterloo, Ontario
N2V 2E9

Telephone
(519) 886-6000

Fax
(519) 886-8023

Email
sales@dalsa.com

Annual Revenue
$27,000,000

Number of Employees in Canada
195

Year Incorporated
1980

Principal Markets
U.S., Europe, Asia

Industrial Sector
Imaging Devices

Web Site
www.dalsa.com

Product or Service

Say "cheese"! Your image has been captured on microchip. But DALSA's cameras aren't for birthday parties or family reunions. They are highly sensitive image sensors and modular expandable cameras for industrial applications. DALSA systems are used for document scanning, image capture, surveillance, process monitoring, and manufacturing inspection. Closer to home, you might find them in your fax machine, in a bar code scanner at your grocery store, in security cameras, camcorders, and document scanners. DALSA cameras incorporate a solid-state Charge-Coupled Device that captures high quality images on silicon chips with remarkable efficiency. With the highest known data transfer speed and spatial resolution, these devices have won an international clientele. DALSA has over 250 customers in 20 countries.

NSERC Researcher

DALSA was initially founded as a consulting firm by Drs. Savvas Chamberlain and David Roulston of the Department of Electrical and Computer Engineering at the University of Waterloo. Both researchers are specialists in microelectronics and integrated circuit design. Dr. Roulston withdrew from the company in 1983 to focus on his research, while Dr. Chamberlain continued, capitalized the company in 1984, and expanded the company. Both Drs. Chamberlain and Roulston receive NSERC support through research grants. Dr. Chamberlain is a Fellow of the IEEE, a member of Micronet, and a winner of the NSERC–Information Technology Association of Canada award for academic excellence. He has published more than 150 papers in refereed scientific journals and professional conferences. Also, he is the author or co-author of a number of patents in the CCD image sensor area. In the technical and scientific community he is a recognized pioneer in the area of CCDs, MOSFETs and active pixel sensor technology.

DEL-AIR Systems Ltd.

Chief Executive Officer
Robert Hawkins
(President)

Address
1704 – 4th Avenue
P.O. Box 2500
Humboldt, Saskatchewan
S0K 2A0

Telephone
(306) 682-5011

Fax
(306) 682-5559

Email
delair@sk.sympatico.ca

Annual Revenue
$10,000,000

Number of Employees in Canada
100

Year Incorporated
1981

Principal Markets
North America, Korea, Europe, Australia

Industrial Sector
Manufacturing

Web Site
www.pima.ca/members/Del-Air.html

Product or Service

The innovative technology that emerged from research at the University of Saskatchewan 17 years ago is the basis of a commercial system that is keeping livestock happy across the country. This technology was developed at the University of Saskatchewan and is now manufactured by DEL-AIR Systems Ltd. The heat exchanger equipment keeps livestock comfortable through winter humidity and saves heating energy. The result is more efficient livestock production systems, with improved animal comfort and more rapid weight gains. The company produces rotationally moulded polyethylene housings that are more tolerant of harsh conditions and easier to clean than conventional systems.

NSERC Researcher

The DEL-AIR heat exchanger emerged from early-stage research work directed by Professor Robert Besant at the University of Saskatchewan Department of Engineering, and funded by an NSERC strategic grant. Dr. Besant directed experiments with heat transfer and simple plywood and polyethylene plate-type heat exchangers. A member of his research staff saw the commercial potential in air-to-air heat exchangers for both agricultural and residential use, and left the University to develop both the DEL-AIR agricultural heat exchanger and the VanEe residential heat exchanger. Two companies were started to exploit this commercial potential: DEL-AIR for the agricultural technology, and Conservation Energy Systems for the residential buildings. Dr. Besant has held several NSERC strategic and research Grants and is currently working on heat recovery technology for commercial buildings.

Dephy Technologies Inc.

Chief Executive Officer
Dr. Luc Potvin

Address
44 Saint Paul Street
Quebec, Quebec
G1K 3V7

Telephone
(418) 692-1414

Fax
(418) 692-4940

Email
dephy@dephy.com

Annual Revenue
Confidential

Number of Employees in Canada
10

Year Incorporated
1989

Principal Markets
International

Industrial Sector
Scientific Equipment & Instrumentation

Web Site
www.dephy.com

Product or Service

Dephy Technologies is active in the field of chemical instrumentation. The company has developed a new ion source for mass spectrometry. The Metastable Atom Bombardment (MAB) ion source, offers unique features for gas-phase ionization. The energy available for ionization is discrete (excitation energy of the atom) leading to a precise control over fragmentation and selective ionization. The MAB source is energy tunable. Those features allow unique analytical applications in various fields. Dephy's customers include the Department of Fisheries and Oceans, the U.S. Food and Drug Administration, Imperial Oil, Ecopetrol, Université Pierre et Marie Curie, and NRC Halifax. Dephy is currently working on other applications of this technology, including post-ionization sources and a bacteria analyser based on mass spectrometry. The company is also active in the development of data treatment software. TICStrip is a specialized software that can eliminate noise from LC/MS data and provide enhanced quality mass spectra while permitting lower detection limits to be attained.

NSERC Researcher

Dr. Michel J. Bertrand is Professor of Analytical Chemistry at the University of Montreal with an active research program in analytical mass spectrometry, data interpretation software and hyphenated techniques. He is involved in the development of new analytical instrumentation and his participation in the development of the MAB source has been a key factor that has transformed Dephy Technologies. Professor Bertrand is working in close collaboration with Dephy Technologies on the development of new techniques of mass spectrometry, such as MAB post-ionization sources. He is presently developing a new mass spectrometry-based bacteria analyzer in collaboration with Dephy Technologies. Dr. Bertrand's fundamental research is supported by NSERC through research grants, infrastructure and major installation grants.

Dewey McMillin & Associates Ltd.

Chief Executive Officer
Dr. John Dewey

Address
1741 Feltham Road, Suite 100
Victoria, British Columbia
V8N 2A4

Telephone
(250) 477-7808

Fax
(250) 477-7808

Email
dma@blastanalysis.com

Annual Revenue
$200,000

Number of Employees in Canada
5

Year Incorporated
1988

Principal Markets
North America, Europe

Industrial Sector
Safety Devices

Web Site
www.blastanalysis.com

Product or Service

The market is exploding for Dewey McMillin & Associates Ltd. Sales of its expert system ***AirBlast***, which provides detailed information about the physical properties of blast waves, continue to grow. The program is based on research conducted at the Shock Studies Laboratory of the University of Victoria. While ***AirBlast*** is geared for use by experts in the field of explosive hazard evaluation, a new product has been developed to assist those who must take action to protect the public in the case of explosive emergencies. ***EBlast*** is available to police and fire departments, and other agencies dealing with emergency situations involving explosions or blast risks. The company also provides consulting and diagnostic services related to explosions in air.

NSERC Researcher

Dewey McMillin & Associates Ltd. was set up to commercialize technology developed in the Shock Studies Laboratory at the University of Victoria. Drs. Dewey, McMillin, and van Netten are experts in blast waves and high-speed photogrammetry, a technique routinely used to monitor blasts from chemical explosions. Dr. Dewey is a professor emeritus of physics and astronomy. His research has been supported by NSERC research and equipment grants.

DIFFRACTO LTD.

CHIEF EXECUTIVE OFFICER
Dr. Omer Hageniers

ADDRESS
2835 Kew Drive
Windsor, Ontario
N8T 3B7

TELEPHONE
(519) 945-6373

FAX
(519) 945-1467

EMAIL
sales@diffracto.com

ANNUAL REVENUE
$3,600,000

NUMBER OF EMPLOYEES IN CANADA
33

YEAR INCORPORATED
1971

PRINCIPAL MARKETS
North America, Europe, Asia

INDUSTRIAL SECTOR
Automotive, Manufacturing

WEB SITE
www.diffracto.com

PRODUCT OR SERVICE

Canadian software is found in auto assembly lines around the world. Chrysler, General Motors, Peugeot, Renault, and BMW, to name a few. These companies use D Sight software from Diffracto Limited, a spin-off company of the University of Windsor. D Sight is an optical image enhancement technique that analyzes dings, dents, wrinkles, and other defects on surfaces such as sheet metal, glass, and plastic. It gives an objective opinion on quality control and has played a key role in improving the quality standards of many car makers. Diffracto also builds products for the measurement of automotive sheet metal assemblies. These laser-based optical sensors are used in line during the manufacturing of the assemblies providing 100% in process quality control.

NSERC RESEARCHER

University of Windsor mechanical engineering professor Dr. Walter North and two of his students are the founders of Diffracto. Their research on optical concepts has been supported by NSERC research grants.

Droycon Bioconcepts Inc.

Chief Executive Officer
Dr. Roy Cullimore

Address
3303 Grant Road
Regina, Saskatchewan
S4S 5H4

Telephone
(306) 585-1762

Fax
(306) 585-3000

Email
lori.dbi@cableregina.com

Annual Revenue
Confidential

Number of Employees in Canada
8

Year Incorporated
1987

Principal Markets
U.S., Australia, Europe

Industrial Sector
Environment

Web Site
www.dbi.sk.ca

Product or Service

Droycon Bioconcepts Inc. has developed a range of simple but effective biodetectors to test for bacteria in water. The patented testers were a response to the need to detect biofouling and improve the management of microbial activities in water wells, wastewater systems, and hazardous waste sites. Currently, nine different biodetectors callled BART™ (Biological Activity Reaction Tests) are manufactured and exported, principally to the United States. Field tests have been performed in the U.S., South Africa, Europe, and in Canada.

The company is also active in the development of systems for rehabilitating plugged water wells, using its patented BCHT™ (Blended Chemical Heat Treatment) processes. Agriculture Canada's Prairie Farm Rehabilitation Administration has found a very serious plugging problem in Canadian prairie water wells. There is no easy way to determine how much investment has been lost in abandoned wells; however, it is known that there is in excess of one billion dollars invested in the water wells currently in operation. Working with the PFRA and the City of North Battleford, Droycon successfully demonstrated its UAB™ (Ultra Acid Base) treatment process for rehabilitating biofouled wells. The BCHT™ technology continues to be developed through Alford, Rogers, Cullimore Concepts Inc. (ARCC Inc.), primarily with the cooperation of the U.S. Army Corps of Engineers.

NSERC Researcher

Droycon Bioconcept's BART™ technology was founded on the research of Roy Cullimore and collaborator George Alford of ARCC. Dr. Cullimore is a professor of microbiology at the University of Regina. He devised these systems in part through the NSERC research grant program during the 1980's. The University's Regina Water Research Institute played a major role in the advancement of the BCHT™ technologies. Dr. Cullimore is presently part of a strategic grant administered by Dr. Rowe of the University of Western Ontario examining the critical factors causing the compromise of drains under sanitary landfill operations.

Dr. Cullimore's acknowledged expertise on iron-related bacteria led to his participation in both the 1996 and 1998 expeditions to the Titanic, in which Droycon's BART's were used. With the cooperation of IPSCO, Regina, four steel test platforms were placed on the RMS Titanic as the first long-term experiment to be left on the ship.

Dynacon Enterprises Limited

Chief Executive Officer
Dr. Glen B. Sincarsin

Address
3565 Nashua Drive
Second Floor
Mississauga, Ontario
L4V 1R1

Telephone
(905) 672-8828

Fax
(905) 672-8829

Email
dynacon@dynacon.ca

Annual Revenue
$1,500,000

Number of Employees in Canada
20

Year Incorporated
1980

Principal Markets
North America

Industrial Sector
Aerospace, Robotics

Web Site
www.dynacon.ca

Product or Service

For nearly two decades, Dynacon has provided highly advanced technical research and development assistance to the Canadian federal government and the aerospace industry. The company's involvement in the Canadian Space Program — from Alouette through to CTS (Hermes) — continues with its role in the Space Station and Radarsat programs. Dynacon Enterprises has participated in more than 100 R & D projects since 1980. Historically, the company's world-renowned expertise has been in the dynamics and control of rigid and flexible spacecraft. In recent years, Dynacon has developed a reputation for successfully applying advanced robotics to terrestrial applications. The company offers expertise in a number of areas, including robot arms, spacecraft dynamics and control, orbit and mission analysis, computer simulations, and software development. Dynacon has extended its expertise into space products such as HPAC — a high-performance control system for microsatellite and small satellite applications based on Dynacon's Mini-Reaction Wheel and Gyro-Damper technologies, and into terrestrial products such as InocuLAB — an automated robotic workcell that prepares specimens for microbiology testing.

NSERC Researcher

Dynacon evolved out of consulting activities related to the research of Dr. P.C. Hughes in the area of the dynamics and control of flexible spacecraft. Dr. Hughes' research, performed at the University of Toronto's Institute for Aerospace Studies (UTIAS), has been supported by numerous NSERC grants over a period of 30 years. More recently, the robotics and neural-net research of Dr. G.M.T. D'Eleuterio, also of UTIAS, has contributed to Dynacon's growth. Dr. D'Eleuterio receives NSERC research and strategic grants. Dynacon's president, Dr. Glen B. Sincarsin, is a former NSERC industrial research fellow and grantee.

E-TEK ELECTROPHOTONICS SOLUTIONS

CHIEF EXECUTIVE OFFICER
Dr. Tino Alavie
(VP and General Manager)

ADDRESS
2770 – 14th Avenue
Markham, Ontario
L3R 0J1

TELEPHONE
(905) 946-1336

FAX
(905) 946-0190

EMAIL
cmagill@electrophotonics.com

ANNUAL REVENUE
Confidential

NUMBER OF EMPLOYEES IN CANADA
51

YEAR INCORPORATED
1993

PRINCIPAL MARKETS
Canada, Europe, Japan

INDUSTRIAL SECTOR
Communications; Infrastructure

WEB SITE
www.e-tek.electrophotonics.com

PRODUCT OR SERVICE

E-TEK ElectroPhotonics Solutions (EPC) specializes in fiber optic components for high capacity telecommunications networks, fiber optic test equipment, and fiber optics sensing systems. EPC's competitive strengths incorporate expertise in WDM, source and detection systems, and tunable fiber Bragg grating devices. The company also manufactures and markets a complete line of sensing products for high precision strain or high temperature measurements using fiber grating sensors. Behind EPC's innovative success is a group of highly skilled professionals with complementary backgrounds, creating a unique spectrum of knowledge and skill with which to pursue its highly interdisciplinary product development program.

E-TEK ElectroPhotonics Solutions is an industrial collaborator in the Intelligent Sensing for Innovative Structures Network of Centres of Excellence. EPC, together with ISIS and its members, has pioneered the use of fiber grating sensing and composite reinforced plastic materials in civil structures. It is the ISIS mandate to develop a unique and novel set of technologies required for the next generation of sophisticated civil engineering structures.

ElectroPhotonics was acquired by E-TEK Solutions in June 1999.

NSERC RESEARCHER

In 1993, ElectroPhotonics began as a spin-off from the University of Toronto Fiber Optic Smart Structures Laboratory. Dr. Tino Alavie, founder and president of EPC, and co-founders Drs. Rob Maaskant and Ray Measures, adopted their research expertise from the Lab to form the first company to offer a commercial sensing system based on fiber optic Bragg grating technology. Since then, Dr. Alavie has fostered the growth of this organization into the telecommunictions industry with the development of advanced products aimed at the emerging fiber optic telecom networks.

Dr. Measures' work is supported through NSERC research, strategic and equipment grants. His lab also receives funding from the Ontario Laser and Lightwave Research Centre.

ELSTAT LIMITED

CHIEF EXECUTIVE OFFICER
Dr. Ion Inculet

ADDRESS
95 Cumberland Street
London, Ontario
N5X 1B7

TELEPHONE
(519) 660-0287

FAX
(519) 660-6913

EMAIL
jamesd.brown@sympatico.ca

ANNUAL REVENUE
$200,000

NUMBER OF EMPLOYEES IN CANADA
5

YEAR INCORPORATED
1972

PRINCIPAL MARKETS
North America

INDUSTRIAL SECTOR
Environment & Agriculture

WEB SITE
N/A

PRODUCT OR SERVICE

There's a problem with pesticides — much of the spray fails to stick on plant leaves. Three researchers from the University of Western Ontario have found a solution — an electrostatic spray that sticks like glue to leaves. Now they have formed Elstat Limited to market their invention. The bottom line? Reduced use of farm chemicals, which means cost savings for farmers and a healthier environment for all.

NSERC RESEARCHER

The co-founders of Elstat Limited are University of Western Ontario electrical engineering professors Ion Inculet and Peter Castle, and materials engineering professor James Brown. Dr. Inculet, an expert in electrostatics and agricultural engineering, has been receiving NSERC research grants since the late 1970s. His research is on electrostatic processes in industrial applications. Dr. Castle is also an expert in electrostatics, and studies electrical charging and deposition of small particles. Dr. Brown's expertise lies in the dielectric properties of materials. Drs. Castle and Brown also receive NSERC research grants.

EM Technologies Inc.

Chief Executive Officer
Dr. J.M Tranquilla

Address
64 Alison Blvd.
Suite 105-106
Fredericton, New Brunswick
E3C 1N2

Telephone
(506) 444-8704 / 459-4334

Fax
(506) 459-4345

Email
prodmktg@emrmicrowave.com

Annual Revenue
Confidential

Number of Employees in Canada
28

Year Incorporated
1987

Principal Markets
North America

Industrial Sector
Mining and Mineral Processing

Web Site
www.emrmicrowave.com

Product or Service

EM Technologies Inc., a subsidiary of EMR Microwave Technology Corporation, is making waves with its microwave systems, which have the potential to dramatically reduce costs and increase productivity in the mining and heavy oil industries. EMR specializes in the design and development of microwave delivery systems, which, for the mining industry, lead to reductions in the costs of metal production, while also eliminating or greatly reducing toxic environmental by-products containing sulphur and arsenic. These processes are equally effective on ores, concentrates, or discarded tailings. The company is working on testing and pilot scale projects with mining producers world wide and is forming strategic partnerships with key industrial engineering service providers, manufacturers, and mining companies for large-scale application and marketing of this technology. EM Technologies has extensive R&D facilities for the full range of development of its technologies from computer modelling to laboratory testing and analysis, to pre-commercial pilot operation. In 1994, the company was acquired by EMR Microwave Technology Corporation, a publicly traded company.

NSERC Researcher

EM Technologies was founded by Dr. James Tranquilla, a professor of electrical engineering at the University of New Brunswick. Dr. Tranquilla's investigation of microwave antenna systems was supported by NSERC through research, strategic project, and equipment grants.

Engineering Seismology Group Canada Inc.

Chief Executive Officer
Dr. Theodore Urbancic

Address
1 Hyperion Court
Kingston, Ontario
K7K 7G3

Telephone
(613) 548-8287

Fax
(613) 548-8917

Email
esgsales@esg.ca

Annual Revenue
Confidential

Number of Employees in Canada
18

Year Incorporated
1993

Principal Markets
International

Industrial Sector
Mining, Petroleum Industries

Web Site
www.esg.ca

Product or Service

Engineering Seismology Group Canada Inc. (ESG) is an innovative company providing solutions to engineering problems using seismic monitoring techniques. ESG designs, manufactures, and installs customized seismic monitoring systems, as well as data acquisition systems for a wide variety of rock mechanics instrumentation. ESG provides a unique combination of services such as seismic data processing and interpretation, numerical modelling, geotechnical mapping and rock mechanics.

ESG's cost-effective system locates and analyzes seismic events, generating substantial visual and numerical information. ESG seismologists and rock mechanics experts can then show clients how to use that information to design a mine, monitor hydraulic fractures, or manage any other activity that involves the stability of underground structures (e.g., LPG storage reservoirs).

An ESG system has been installed at the Sudbury Neutrino Observatory to monitor rock mass conditions and to evaluate any changes that may occur as a result of mining occurring remote from the observatory. ESG systems have also been instrumental in interpreting the fracture behaviour around the opening at AECL's Underground Research Laboratory in Pinawa, Manitoba. ESG's other clients include Canadian companies such as Inco, Falconbridge, Barrick Gold, and Noranda, as well as other major mining, petroleum, and civil engineering firms in the U.S., Europe, Australia, China, Korea, and Chile.

NSERC Researcher

ESG was founded to commercialize developments from the laboratory of Dr. Paul Young, a professor of geological sciences at Queen's University from 1985-1993. During that time, he held a number of NSERC research, strategic, and equipment grants for monitoring seismicity. He is currently a professor of geology at the University of Keele in the United Kingdom. ESG was founded by Dr. Ted Urbancic, a former doctoral student and postdoctoral fellow of Dr. Young's, and Dr. Cezar Trifu, a research associate in Dr. Young's lab at Queen's. The third founding member, Mike Neumann, was a research associate of Dr. Will Bawden, who held the Chair of Mine Design and was Head of the Department of Mining Engineering at Queen's. Dr. Bawden held NSERC research and strategic grants to develop mine design strategies that integrated seismicity, numerical modelling, and geomechanical data. He currently holds the Pierre Lassonde Chair in Mining Engineering at the University of Toronto.

Ensyn Technologies Inc.

Chief Executive Officer
Dr. Robert Graham

Address
Suite 201, 380 Hunt Club Rd.
Ottawa, Ontario
K1V 1C1

Telephone
(613) 248-2257

Fax
(613) 248-2260

Email
ggorsky@ensyn.com

Annual Revenue
Confidential

Number of Employees in Canada
30

Year Incorporated
1991

Principal Markets
North America, Europe

Industrial Sector
Environment, Forestry, Energy

Web Site
N/A

Product or Service

This Ontario company has a commercial process to transfer solid wastes, particularly forest residues, municipal wood waste and agricultural residues into valuable liquid fuels and chemicals. Ensyn Technologies Inc. builds and operates the Rapid Thermal Processing (RTP™) technology which evolved from work conducted at the University of Western Ontario in the early 1980s. The four commercial RTP™ plants in operation convert wood residues and other biomass to a boiler fuel and food chemicals. Several additional RTP™ plants are currently in progress in Sweden, the U.K. and North America.

NSERC Researcher

Ensyn Technologies is a spin-off of research carried out at Dr. Maurice Bergougnou's PROREACTOR Lab at the University of Western Ontario. Dr. Robert Graham, a graduate student in that laboratory, founded the company to commercialize a circulating transported bed fast pyrolysis reactor. Dr. Bergougnou continues to receive NSERC funding for his work on the development of high performance reactors.

EnviroMetal Technologies Inc.

Chief Executive Officer
John Vogan

Address
745 Bridge Street W.
Suite 7
Waterloo, Ontario
N2V 2G6

Telephone
(519) 746-2204

Fax
(519) 746-2209

Email
sohannesin@eti.ca

Annual Revenue
$1,300,000

Number of Employees in Canada
5

Year Incorporated
1992

Principal Markets
International

Industrial Sector
Environment, Waste Treatment

Web Site
www.eti.ca

Product or Service

A new product that destroys harmful organic compounds could be used for dealing with a wide range of environmental problems, particularly those involving the release of chlorinated organic chemicals. It is being marketed by EnviroMetal Technologies Inc., a spin-off company based on research done at the University of Waterloo. The process uses an iron material to destroy organic chemicals relatively quickly, without the need for expensive excavation and treatment of soils at hazardous waste handling centres. The technology is particularly suited for in situ clean-up of contaminated groundwater. EnviroMetal Technologies currently has more than 150 active projects including several at U.S. Super Fund Sites and international sites.

NSERC Researcher

EnviroMetal's founder is Robert Gillham, an earth sciences professor at the University of Waterloo. He has been receiving NSERC research grant funding since the early 1980s. Dr. Gillham's work involves an industrially oriented research project sponsored by NSERC with Laidlaw Environmental Services Ltd. It is directed at understanding the migration of industrial organic compounds in different types of soil. As well, he was appointed to the University of Waterloo's industrial research chair in Groundwater Remediation in May 1997. This Chair is being funded by NSERC, Motorola and EnviroMetal Technologies Inc.

ESTCO Energy Inc.

Chief Executive Officer
Dr. William Adams

Address
21 Concourse Gate, Unit 3
Nepean, Ontario
K2E 7S4

Telephone
(613) 226-7171

Fax
(613) 226-7871

Email
julio@estco.com

Annual Revenue
Confidential

Number of Employees in Canada
9

Year Incorporated
1995

Principal Markets
North America

Industrial Sector
Energy, Automotive Industry

Web Site
N/A

Product or Service

ESTCO Energy Inc. brings new meaning to the expression "knowledge is power." This company is a consulting and R&D powerhouse, offering expertise in batteries, fuel cells and supercapacitors. ESTCO helps client companies determine the most appropriate battery technology for each job, from installation, to maintenance, and, finally, safe disposal of the fuel source. ESTCO has provided services to the Canadian Coast Guard, Natural Resources Canada, Transport Canada, INCO, the International Energy Agency, and Carus Chemicals (U.S.). ESTCO's other major activity is creating advanced technologies. In 1996, the company formed a consortium with Ontario Hydro Technologies and Battery Technologies Inc. to develop a new Hybrid Electric Vehicle (HEV). One of ESTCO's roles is to evaluate the efficiency of the HEV. The company has a new product initiative, the Battery Health Manager (BHM), which is at the precommercial stage of development. The BHM will be sold in the telecommunications, process industry, utilities, and railway sectors.

NSERC Researcher

ESTCO began life as the Electrochemical Science and Technology Centre at the University of Ottawa. An NSERC strategic grant helped to advance ESTCO's innovative electrochemical power sources for vehicle development. The strategic grant was held by Dr. Brian Conway, a professor of chemistry at the University of Ottawa. ESTCO president Dr. Bill Adams, a co-applicant in the project, was also an adjunct professor of chemical engineering at the University of Ottawa.

Focal Technologies Inc.

Chief Executive Officer
Graham Smith

Address
40 Thornhill Dr., Unit 7
Dartmouth, Nova Scotia
B3B 1S1

Telephone
(902) 468-2263

Fax
(902) 468-2249

Email
info@focaltech.ns.ca

Annual Revenue
$13,000,000

Number of Employees in Canada
80

Year Incorporated
1983

Principal Markets
International

Industrial Sector
Marine Tech., Manufacturing

Web Site
www.focaltech.ns.ca

Product or Service

Focal Technologies Inc. designs and manufactures fibre optic rotary joints and slip rings that provide communication and power connections between objects that move and their stationary base. Focal designs these systems to withstand the harshest environments. Focal devices can be found in winch and sonar systems, tank turrets, and submarine robots. Focal's fluid rotary unions provide subsea controls and life support to divers. Primary customers include major underwater operators, seismic companies, and manufacturers of Remotely Operated Vehicles. In addition, Focal has customers in the robotics, automation, material handling, oil and gas, and defence industries. Focal's second product line features sophisticated oceanographic instruments. The Optical Particle Counter (OPC) provides fast and continuous measurement of marine organisms over large regions. The OPC is a low maintenance device and the best tool available for measuring levels of zooplankton and fish eggs in seawater.

NSERC Researcher

Focal Technologies was set up as a joint undertaking between Nova Scotia's Seimac Ltd. and Dalhousie University through Dr. Barry Paton's Fibre Optics Lab. Dr. Paton's research in fibre optics received support from NSERC research, strategic, and equipment grants. The oceanographic devices were designed partly by NSERC-funded researchers in Dalhousie's Oceanography Department. The company also commercialized technologies developed at the Nova Scotia Research Foundation Corp. (now InnovaCorp). Focal Technologies benefited from funding from NRC's Industrial Research Assistance Program.

Forbes Medi-Tech Inc.

Chief Executive Officer
Tazdin Esmail

Address
Suite 2000, 1066 West Hastings Street
Vancouver, British Columbia
V6E 3X2

Telephone
(604) 689-5899

Fax
(604) 689-7641

Email
info@forbesmedi-tech.com

Annual Revenue
$6,000,000

Number of Employees in Canada
34

Year Incorporated
1993

Principal Markets
North America, Europe

Industrial Sector
Pharmaceuticals & Functional Foods

Web Site
www.forbesmedi-tech.com

Product or Service

The core technology of Forbes Medi-Tech is the extraction of value-added materials from the "tall-oil" waste produced by the pulp and paper industry. The company utilizes these extracts to produce cholesterol-lowering agents and pharmaceutical steroids. In animal studies, Forbes' anti-cholesterol agent FCP-3P1 has been proven effective at reducing "bad" cholesterol and preventing the development of atherosclerotic lesions. In humans, the phytosterol preparation significantly lowers blood cholesterol when added to the diet of hyperlipidemic subjects. With Novartis Nutrition, Forbes is testing a preparation of these sterols, Phytrol, as a cholesterol-lowering nutriceutical for use in a variety of food classes. In addition, the company is developing Cardiorex which will be used as a prescription pharmaceutical for lowering cholesterol. Forbes technology also converts plant sterols into Androstenedione (AD). AD is an essential component of hormones and pharmaceutical steroids found in oral contraceptives and treatments for skin disorders, arthritis, and asthma. AD is currently derived from soy bean oil and typically requires a five-day fermentation process. Forbes can produce AD faster and cheaper from plant sterols, which are available in abundance from the pulping industry. Forbes is scaling up AD production with two European pharmaceutical manufacturers. Forbes Medi-Tech adds another valuable dimension to Canada's forestry industry.

NSERC Researcher

Forbes Medi-Tech commercializes research conducted by Dr. James Kutney in the Department of Chemistry at the University of British Columbia. NSERC supported his work with tall oils through research, equipment, and collaborative research and development grants. Dr. Kutney recently completed an industrially oriented research grant investigating phytosterols, co-sponsored by Forbes Medi-Tech. Forbes Medi-Tech also benefited from NRC's Industrial Research Assistance Program (IRAP) funding.

Gensel Biotechnologies Ltd.

Chief Executive Officer
Dr. Jeremy C. Gawen

Address
20 Queen Street West, Suite 316
Toronto, Ontario
M5H 3R3

Telephone
(416) 581-8850

Fax
(416) 581-0020

Email
gensel@istar.ca

Annual Revenue
Confidential

Number of Employees in Canada
5

Year Incorporated
1998

Principal Markets
International

Industrial Sector
Agriculture and Food

Web Site
N/A

Product or Service

Increasingly, livestock such as cattle and swine are produced through artificial insemination. This enables farmers to breed animals with the most desired genetic traits; for example, for beef cattle, one criterion is large size, for dairy cows, it's high milk production. But this good lineage is of little comfort to the dairy farmer with a barn full of male calves. After all, bulls don't give milk. In this industry, it's clear that sex matters — in fact, getting it right every time could boost farm productivity in North America and Western Europe by more than two billion dollars per year. Gensel Biotechnologies is set to make this happen. The company is developing technology that will ensure that producers get the right animal for the job with better than 90% efficiency. Gensel's patented Semen Sexing System uses sex-specific antigens to separate the "male" and "female" sperm prior to conception. Thus, dairy farmers can breed their animals with only "female" sperm, and beef producers can select exclusively "male" sperm. Gensel's technique doesn't require expensive equipment or skilled technicians, unlike embryo sexing or cell sorting, and is non-invasive. The system will be licensed to Artificial Insemination companies, who will find larger markets for the premium sex-selected semen. This will also help to improve the genetic quality of the herd faster, further boosting productivity on the farm. The system should be ready for large-scale commercial use early in the next decade.

Gensel is listed on the Alberta Stock Exchange.

NSERC Researcher

Gensel was established to commercialize the technology developed by Dr. Stan Blecher at the University of Guelph's Department of Molecular Biology and Genetics. His work has been supported by NSERC through collaborative research and development and research grants, and the Technology Partnerships Program. This research has also been sponsored by the University Research Incentive Fund, the Ontario Ministry of Agriculture, Food and Rural Affairs, and others.

GUIGNÉ INTERNATIONAL LTD.

CHIEF EXECUTIVE OFFICER
Dr. Jacques Yves Guigné

ADDRESS
685 St. Thomas Line
Paradise, Newfoundland
A1L 1C1

TELEPHONE
(709) 895-3819

FAX
(709) 895-3999

EMAIL
gil@guigne.nf.ca

ANNUAL REVENUE
$2,750,000

NUMBER OF EMPLOYEES IN CANADA
30+

YEAR INCORPORATED
1989

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Space, Underwater Sonar, Defense, Food & Pharmaceuticals

WEB SITE
www.guigne.nf.ca

PRODUCT OR SERVICE

A world leader in innovative acoustic design, Guigné International Ltd. (GIL) of Paradise, Newfoundland, offers its clients cost-effective solutions to acoustical engineering problems. These solutions are provided by instruments and services based upon GIL's core technology, DRUMS™ (Dynamically Responding Underwater Matrix Sonar/Dynamically Responding Ultrasonic Matrix System) — a system originally designed to image and survey the effects of trawling on the ocean floor. DRUMS™ has gained acceptance and recognition within the international scientific and engineering communities as a saleable tool for the solution of a broad variety of engineering problems in a cost-effective manner. Detection and health of marine life, inspection of hydro-electric dams, the manufacture of protein crystals used in pharmaceuticals, and the moulding of high temperature materials into complex shapes are just some of the potential applications for which DRUMS™ has been used.

NSERC RESEARCHER

Established in 1989 by Jacques Yves Guigné, the company presently employs over 20 top engineers and physicists, plus electronics and administrative support staff. While GIL is focussed on advanced acoustical research and design engineering, it has formed a joint venture agreement with a new company, Guigné Technologies Ltd. (GTL), in order to commercialize its technology on a global scale. GTL efforts will be concentrated on the marketing of GIL's products.

Dr. Guigné is an associate professor (research) in the Faculty of Engineering and Applied Science at Memorial University. Among his research interests are the acoustical investigation of contaminated bed sediment properties and acoustical methods of assessing cracks in steel structures. Dr. Guigné receives NSERC research and strategic grants.

Harding Instrument Company Ltd.

Chief Executive Officer
Dr. Patrick Harding

Address
9431 – 41st Avenue
Edmonton, Alberta
T6E 5X7

Telephone
(403) 462-7100

Fax
(403) 450-8396

Email
path@harding.ab.ca

Annual Revenue
$4,000,000

Number of Employees in Canada
41

Year Incorporated
1969

Principal Markets
North America

Industrial Sector
Oil and Gas, Security, Communications

Web Site
N/A

Product or Service

Edmonton's Harding Instrument Company Ltd. has a long history as a university spin-off company. It was founded in 1969 by four electrical engineering professors from the University of Alberta. The company designs and manufactures micro-electronics for a variety of applications. Its product line includes advanced flow measurement devices for the oil patch and a voice communications system for large institutions. The intercom system has been installed in more than 30 jails in Canada and the United States. A system was recently installed in one of the largest corrections facilities in the U.S.

NSERC Researcher

Patrick Harding, now a professor emeritus at the University of Alberta, was one of the original partners in the Harding Instrument Company. He participated in the establishment of the Alberta Microelectronics Centre, where he remains a director. Dr. Harding's university research was supported by NSERC research grants.

HexaVision Technologies Inc.

Chief Executive Officer
Dr. Marc Tremblay

Address
1020 Route de l'Église
Suite 200
Sainte-Foy, Quebec
G1V 3V9

Telephone
(418) 657-5000

Fax
(418) 657-7627

Email
info@hexavision.com

Annual Revenue
$1,000,000 (preliminary)

Number of Employees in Canada
35

Year Incorporated
1995

Principal Markets
International

Industrial Sector
Manufacturing, Robotics

Web Site
www.hexavision.com

Product or Service

Computers, automobiles, cell phones, and appliances all contain parts manufactured in controlled environments using industrial automation. HexaVision offers a new technology that will make this kind of manufacturing much more efficient. HexaVision's smart image sensors give robots something closer to human vision. These sensors detect the shape of an object and filter out unnecessary input. Then they send the information to the computer "brain," which recognizes the form and issues commands to the robot's arm. This happens in real time, so robots move more efficiently, cutting manufacturing costs. Unlike other systems on the market, HexaVision technology, sometimes called the "Intelligent Robot Eye," works in all kinds of light conditions. This makes it ideal for pattern recognition, quality control, and robot guidance. For example, it is perfectly suited for guiding automated industrial vehicles such as cranes. It will also be used for intelligent transport systems, surveillance and security, and autonomous mobile robotics.

NSERC Researcher

HexaVision was founded by Dr. Marc Tremblay, a former professor of electrical engineering at Laval University. Dr. Tremblay is a member of the Institute for Robotics and Intelligent Systems Network of Centres of Excellence. HexaVision received funding from Société Innovatech Quebec, Sofinov, and the Business Development Bank of Canada. Dr. Tremblay has received NSERC funding through research and equipment grants.

Honeywell Hi-Spec Solutions Inc. (fka SACDA Inc.)

Chief Executive Officer
Russel H. McMeekin

Address
343 Dundas Street
London, Ontario
N6B 1V5

Telephone
(519) 679-6570

Fax
(519) 679-3364

Email
N/A

Annual Revenue
Confidential

Number of Employees in Canada
130 (750 world wide)

Year Incorporated
1985

Principal Markets
Confidential

Industrial Sector
Processing Industry

Web Site
www.hispec.com

Product or Service

Honeywell Hi-Spec Solutions Inc. (fka SACDA Inc.) is a leading supplier of advanced applications, training, and services for the hydrocarbon processing, chemicals, pulp and paper, and oil and gas industries. Their best-in-class advanced applications and services are tailored for the process industries. They are engineered to ensure the production of high-quality products consistently, safely, and profitably.

Honeywell Hi-Spec Solutions is supported by Honeywell's global network of offices and service support. The Hi-Spec Solutions team has access to over 1,200 dedicated engineering experts in storage, simulation, process training, and plant information systems. As well, Hi-Spec Solutions works with over 3,000 implementation/support staff in Honeywell IAC leading to the world's most extensive solutions team for the process industries

SACDA Inc. was acquired by Honeywell Limited in 1992.

NSERC Researcher

SACDA was formed in 1973 as a research activity of the Faculty of Engineering Science at the University of Western Ontario. Its mandate was to develop innovative simulation software systems in an academic environment that could be transferred to industry. Dean A.I. Johnson, a pioneer in process simulation, became SACDA's first Director and staffed the activity with postgraduate students in chemical engineering. As the company became established, permanent experienced staff were hired and it became a more formal research institute within the university environment. SACDA was incorporated in 1985. Dr. Shewchuk, the company's president until 1995, was an adjunct professor in the Faculty of Engineering Science. Dr. Shewchuk received NSERC grants for his investigations of simulation systems.

Hycal Energy Research Laboratories Ltd.

Chief Executive Officer
Dr. Douglas W. Bennion

Address
1338A – 36th Avenue N.E.
Calgary, Alberta
T2E 6T6

Telephone
(403) 250-5800

Fax
(403) 291-0481

Email
general@hycal.com

Annual Revenue
$5,500,000

Number of Employees in Canada
40

Year Incorporated
1976

Principal Markets
International and Domestic

Industrial Sector
Energy, Oil and Gas

Web Site
www.hycal.com

Product or Service

Hycal is a real Canadian pioneer. As one of the first Canadian petroleum research firms, it has developed equipment to perform research that previously had to be done off-shore. Working in the area of reservoir engineering, production engineering and enhanced oil recovery, Hycal provides the oil industry with applied research and consulting services. With more than 35 years of experience and more than 200 client companies around the world, Hycal is a significant presence in commercial petroleum research.

NSERC Researcher

Hycal was initially formed by Dr. Doug Bennion and Dr. Robert Moore to perform research for the infant Petro Canada, which had no laboratories of its own at start-up. Dr. Bennion is a professor emeritus and Dr. Moore a professor in the Department of Chemical and Petroleum Engineering at the University of Calgary. NSERC has supported their basic research through research, strategic, and equipment grants.

HYDROMANTIS, INC.

CHIEF EXECUTIVE OFFICER
Joe Stephenson

ADDRESS
1685 Main Street West, Suite 302
Hamilton, Ontario
L8S 1G4

TELEPHONE
(905) 522-0112

FAX
(905) 522-0031

EMAIL
info@hydromantis.com

ANNUAL REVENUE
$1,500,000

NUMBER OF EMPLOYEES IN CANADA
14

YEAR INCORPORATED
1985

PRINCIPAL MARKETS
North America, Europe, Japan, Korea

INDUSTRIAL SECTOR
Water Treatment, Environment

WEB SITE
www.hydromantis.com

PRODUCT OR SERVICE

Founded in 1985, Hydromantis, Inc. is a unique and small Canadian environmental engineering consulting company. It specializes in the application of environmental planning, innovative plant optimization programs, application of process engineering skills and solutions to wastewater treatment, collection systems, and water resources management. It has developed around a core of senior engineering staff who are experienced in all aspects of wastewater engineering.

Hydromantis specializes in the application of proven methods for the optimization and design of wastewater treatment systems. It provides clients with services that address their needs in areas of environmental planning, process, conceptual and pre-design engineering, operations and operator training, software design and support, instrumentation and control, and treatability assessments.

Hydromantis staff authored most sections of the Ontario Ministry of the Environment and Energy's Process Audit Manual for plant optimization. They are experienced in all aspects of wastewater treatment including desktop analyses, piloting, field testing at full scale, and predesign engineering of water and wastewater treatment facilities. It has expanded its capabilities to include multidiscipline detailed design and services during construction. Hydromantis has the experience and ability to carry out projects from the initial conceptual stage through to commissioning, operation, and training of facility staff.

The company offers a unique blend of consulting engineering services and innovative software products designed to optimize water and wastewater treatment plant design, operation and operator training. GPS-X (General Purpose Simulator) is Hydromantis's key software product together with Capdet PC and SimWorks. GPS-X is recognized as the most comprehensive and powerful treatment plant simulator in the world. GPS-X includes many worldwide-based models and utilities for the use of operators, consultants and researchers.

NSERC RESEARCHER

Hydromantis was established in 1985 by Gilles Patry, then a professor at McMaster University's Department of Civil Engineering. Dr. Patry is continuing his research at the University of Ottawa, where he is also the Vice-Rector (Academic).
Dr. Patry's projects are funded by NSERC research grants.

IGT Pharma Inc.

Chief Executive Officer
Bruce Schmidt

Address
311 – 2386 East Mall
Vancouver, British Columbia
V6T 1Z3

Telephone
(604) 822-3503

Fax
(604) 822-3506

Email
zd_igt@istar.ca

Annual Revenue
Confidential

Number of Employees in Canada
13

Year Incorporated
1992

Principal Markets
International

Industrial Sector
Pharmaceuticals & Medicine

Web Site
www.igtpharma.com

Product or Service

IGT Pharma Inc. uses advances in synthetic chemistry to develop new anti-cancer drugs and make existing cancer therapies better. IGT is working on two new drugs for cancer treatment: 1) pre-clinical tests show that IGT's Anhydrovinblastine (AVLB) drug reduces cancerous tumors in the lung and cervix faster than one of the most successful drugs on the market. Clinical trials are scheduled for 1998; 2) IGT developed an analogue of Etoposide, a commonly used treatment for cancers of the lung, brain and bladder. The IGT analogue is as effective as, or more effective than, the original but has fewer side effects. Pre-clinical trials are under way.

NSERC Researcher

IGT's new cancer drug, Anhydrovinblastine, is based on research conducted by Dr. James Kutney of UBC's chemistry department. NSERC has supported his work through equipment, research, strategic project, and industrially oriented research grants. Dr. Kutney is a member of IGT's Oncology Advisory Committee. IGT Pharma received support from the National Research Council through its Industrial Research Assistance Program (IRAP.)

IMAGING RESEARCH INC.

CHIEF EXECUTIVE OFFICER
Kevin McCormack

ADDRESS
Brock University
500 Glenridge Avenue
St. Catharines, Ontario
L2S 3A1

TELEPHONE
(905) 688-2040

FAX
(905) 685-5861

EMAIL
imaging@spartan.ac.brocku.ca

ANNUAL REVENUE
Confidential

NUMBER OF EMPLOYEES IN CANADA
38

YEAR INCORPORATED
1986

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Scientific Devices and Instrumentation

WEB SITE
http://imaging.brocku.ca

PRODUCT OR SERVICE

Many questions in biology, pharmaceutical development, and biotechnology are answered by making measurements of brightness, size, or shape. Imaging Research Inc. produces tools (software and systems) that make precise measurements from images captured by cameras, laser scanners, and other devices. Imaging Research also develops and manufactures specialized lenses and detectors for ultra-low light measurement. The company's products include the MicroComputer Imaging Device (MCID) and the Analytical Imaging Station (AIS), which are widely used (more than 1000 systems in the field) in life science research. Imaging Research also makes dedicated products for array genomics (ArrayVision software), bioinformatics (Statistical Informatics software), and drug discovery (a camera, specialized lens, and ArrayVision software.) The company devotes equal attention to products for basic research, and for the pharmaceutical industry.

In 1998, Imaging Research entered into a collaboration with Amersham Pharmacia Biotech, which has exclusive rights to market Imaging's products for drug discovery.

NSERC RESEARCHER

Imaging Research was founded by psychology professor Peter Ramm of Brock University. Dr. Ramm, now Chairman and Chief Scientist at Imaging Research, has received a number of NSERC research grants since the mid-1980s.

INFOLYTICA CORPORATION

CHIEF EXECUTIVE OFFICER
Dr. David A. Lowther

ADDRESS
300 Leo Pariseau, Suite 2222
P.O. Box 1144, Place du Parc
Montreal, Quebec
H2W 2P4

TELEPHONE
(514) 849-8752

FAX
(514) 849-4239

EMAIL
info@infolytica.com

ANNUAL REVENUE
Confidential

NUMBER OF EMPLOYEES IN CANADA
24

YEAR INCORPORATED
1978

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Manufacturing, Electronics

WEB SITE
www.infolytica.qc.ca

PRODUCT OR SERVICE

Magnetic technology is at the heart of much electrical and electronic equipment. While the technology has been incredibly successful, it has also created some unique design problems. Often, the only way to test whether a device such as a VCR or computer hard drive is viable is to build a prototype, a time-consuming and expensive process. Montreal's Infolytica Corporation has a time- and money-saving solution. It has developed a software package that analyzes potential designs without having to construct a prototype. The software is based on research done at McGill University. Infolytica also offers consulting services and custom software design for clients including the Department of National Defence, General Electric, and NASA.

NSERC RESEARCHER

Infolytica was founded by Dr. David Lowther, an electrical engineering professor at McGill University, and the late Dr. Peter Silvester, also of McGill, together with Professor Ernest Freeman from Imperial College, London, U.K. Dr. Lowther, who is currently Infolytica's President, has research interests in electromagnetic field analysis, computer software, computer-aided design and the automated design of electromagnetic devices. Dr. Jonathan Webb, Vice-President of Infolytica, is also an electrical engineering professor at McGill, and his area of research includes numerical analysis systems and electromagnetic analysis of high frequency systems. Drs. Lowther and Webb receive NSERC support in the form of research and equipment grants.

INNOVA TECHNOLOGIES CORP.

CHIEF EXECUTIVE OFFICER
Michael Kehoe

ADDRESS
525 University Avenue
Toronto, Ontario
M5G 2L3

TELEPHONE
(416) 340-8818

FAX
(416) 340-0415

EMAIL
marc@innovatechcorp.com

ANNUAL REVENUE
$10,000,000 (preliminary)

NUMBER OF EMPLOYEES IN CANADA
30

YEAR INCORPORATED
1992

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Medical and Dental

WEB SITE
http://www.innovatechcorp.com/

PRODUCT OR SERVICE

More people are flashing their pearly whites thanks to Innova Technologies Corp. The company has developed an innovative new dental implant system called Endopore. Innova's Endopore is easier to install than conventional implants and patients recover faster. The Endopore implant has a special porous coating that allows the implant to mesh with the patient's bone, so the prosthesis is stable and healthy. This innovative material also reduces the risk of rejection. Because it is easier to implant, more dentists can offer the Endopore system to their patients. Innova has helped to put smiles on the faces of people around the world, exporting Endopore to the United States, England, France, Russia, Australia, Japan, Korea, Taiwan, India, Singapore, and Saudi Arabia, to name just a few. Endopore's success has encouraged the company to develop other novel biodegradable materials for tissue engineering and orthopedic applications. Innova is also looking at commercializing other medical devices developed at the University of Toronto.

NSERC RESEARCHER

The Endopore system was invented by Dr. Robert Pilliar, a professor in the Faculty of Dentistry and the Centre for Biomaterials, with Drs. Douglas DePorter and Philip Watson, also in the Faculty of Dentistry at the University of Toronto. Dr. Pilliar currently holds a strategic project grant for the study of "Novel biodegradable implants for anchorage of tissue engineered fibrocartilage to bone." Since 1978, Dr. Pilliar has received NSERC support through research, strategic, equipment, and collaborative project grants. Dr. Pilliar also receives funding from the Medical Research Council.

INRO Consultants Inc.

Chief Executive Officer
Dr. Michael Florian

Address
5160 Décarie Boulevard, suite 610
Montreal, Quebec
H3X 2H9

Telephone
(514) 369-2023

Fax
(514) 369-2026

Email
sales@inro.ca

Annual Revenue
$3,200,000

Number of Employees in Canada
23

Year Incorporated
1976

Principal Markets
International

Industrial Sector
Transportation, Logistics, Urban Planning

Web Site
www.inro.ca

Product or Service

Transportation planning studies are more productive and efficient in many of the countries around the world, thanks to INRO Consultants Inc. The company produces the EMME/2 software that is used to model urban, regional and national transportation of people. INRO Inc.'s clients include more than 598 organizations in 60 countries. They use software to model the results of changes to a transport infrastructure and land use such as the construction of new roads, the introduction of new transit services, and the development of new residential areas. Based on research undertaken at the University of Montreal's Centre for Research on Transportation, the software is designed to be applicable in numerous fields. Its powerful macro language allows the implementation of complex transport models.

NSERC Researcher

INRO Consultants was founded by Michael Florian, a professor in the University of Montreal's Department of Computer Science and Operational Research and a member of the University's Centre for Research on Transportation. Dr. Florian's work is supported by NSERC research, equipment and strategic grants.

INVERPOWER CONTROLS LTD.

CHIEF EXECUTIVE OFFICER
Dr. Shashi Dewan

ADDRESS
835 Harrington Court
Burlington, Ontario
L7N 3P3

TELEPHONE
(905) 639-4692

FAX
(905) 639-0961

EMAIL
sales@inverpower.com

ANNUAL REVENUE
$18,900,000

NUMBER OF EMPLOYEES IN CANADA
175

YEAR INCORPORATED
1980

PRINCIPAL MARKETS
North America, Europe, Asia Pacific

INDUSTRIAL SECTOR
Steel, Metal Refining, Utilities

WEB SITE
www.inverpower.com

PRODUCT OR SERVICE

Inverpower Controls Ltd. is a Canadian high technology company that designs, manufactures, and services power electronics and control systems and electromagnetic stirring (EMS) systems. Inverpower's primary activity is manufacturing products for large industrial power users and electrical utilities and for a number of emerging niche markets. Inverpower's products enable end-users to optimize performance in a broad range of industrial applications and, in the case of EMS systems, to enhance quality and productivity in the steelmaking process.

Inverpower has an exceptionally capable team of electronic and software engineers and, after the ambitious R&D program of the past two years, has developed and proven several important new products that make it the technology leader in its selected markets. Several important initiatives have been directed at improving manufacturing capability. Currently, the company's efforts are focused on cost reduction and development of new ratings for existing products.

A leading example of these new products is the high-current switching rectifier (HCSR). Following the successful completion of tests at a leading manufacturer of lithium, the product is now being marketed to the electrochemical, metal refining, furnace and plasma industries in North America. The HCSR offers significant operational advantages and cost savings and is gaining market acceptance. In competition with large multinational electrical equipment manufacturers, the company recently won a significant order for installation of several of these HCSR units at an electrochemical facility.

NSERC RESEARCHER

Dr. Shashi B. Dewan, the founder of Inverpower and a professor emeritus at the University of Toronto, is an internationally recognized authority in the field of power electronic technology. Dr. Dewan has made substantial contributions to the training of highly qualified personnel; many of the students he supervised are now employed in industry or hold positions at universities. His research has been consistently supported by NSERC research and equipment grants. He continues to explore power electronics and control in the university setting, concentrating on the problem of eliminating harmonics that distort signals within the power conversion process.

ITRES Research Ltd.

Chief Executive Officer
Dr. Clifford D. Anger

Address
#155 East Atrium
2635 – 37th Avenue NE
Calgary, Alberta
T1Y 5Z6

Telephone
(403) 250-9944

Fax
(403) 250-9916

Email
info@itres.com

Annual Revenue
$3,500,000

Number of Employees in Canada
35+

Year Incorporated
1979

Principal Markets
International

Industrial Sector
Imaging Instrumentation (Observation)

Web Site
www.itres.com

Product or Service

ITRES manufactures and supports the ***casi***, a commercial all-digital, programmable imaging spectrograph used for airborne remote sensing. The ***casi*** provides information products for water quality, forestry and agriculture. ITRES' current focus is on using the products for detecting military surface land mines and extracting agricultural and forest inventory products including stem counts, crown closure estimates, patch mapping and stream management. The ***casi*** is available for sale or lease.

NSERC Researcher

The founder of ITRES is Clifford Anger, a professor of physics and astronomy at the University of Calgary. The company is an earthbound spin-off of Dr. Anger's space-based research. He has designed scientific devices for the ISIS 2 satellite and the Swedish Viking spacecraft to Mars. He is also a member of NASA's Galileo mission to Jupiter team. The ***casi*** is a system based on technology developed by ITRES personnel for Canadian and U.S. space projects. Dr. Anger's research has been supported by NSERC through research, equipment, and collaborative special project grants, and industrial research fellowships.

KEMESTRIE INC.

CHIEF EXECUTIVE OFFICER
Paul Jollez (President)
Pierre Laborde (Director General)

ADDRESS
4245 Garlock Street
Sherbrooke, Quebec
J1L 2C8

TELEPHONE
(819) 569-4888

FAX
(819) 569-8411

EMAIL
kem@interlinx.qc.ca

ANNUAL REVENUE
Confidential

NUMBER OF EMPLOYEES IN CANADA
18

YEAR INCORPORATED
1992

PRINCIPAL MARKETS
North and South America, Europe

INDUSTRIAL SECTOR
Fine Chemicals, Energy, Environment

WEB SITE
N/A

PRODUCT OR SERVICE

One of the best ways to get companies to go "green" is to help them to make a profit at it. And that's what Kemestrie does. The company has developed and markets biorefinery technology, based on research at the University of Sherbrooke, that transforms organic waste materials (including forestry, industrial and agricultural waste) into valuable products such as fine chemicals. Pilot plants and two commercial plants using Kemestrie technology have already been set up.

NSERC RESEARCHER

Kemestrie was founded by Dr. Esteban Chornet, professor of chemical engineering at the University of Sherbrooke. Dr. Chornet is the head of the Groupe de recherche sur les technologies et procédés de conversion (GRTPC) (Research group on conversion technologies and processes). This group developed the technology used by Kemestrie; the company was set up to transfer the group's findings to the industrial sector. Dr. Chornet and the GRTPC receive NSERC strategic, research and equipment grants.

Kinetic Sciences Inc.

Chief Executive Officer
Guy Immega

Address
1584 Rand Avenue
Vancouver, British Columbia
V6P 3G2

Telephone
(604) 267-7805

Fax
(604) 267-7806

Email
info@kinetic.bc.ca

Annual Revenue
$1,053,000

Number of Employees in Canada
8

Year Incorporated
1991

Principal Markets
North America

Industrial Sector
Robotic Engineering

Web Site
www.kinetic.bc.ca

Product or Service

Kinetic Sciences Inc. has extensive contracts for its advanced robotic vision systems with the Department of National Defence and the Canadian Space Agency. Its main product is the Eagle Eye Vision System, a three-dimensional robotic vision system originally developed at the University of British Columbia. The company also markets robotic grippers for use in space.

Kinetic Sciences Inc. has a major contract with Lockeheed Martin and the U.S. Department of Energy to develop a robotic inspection system for stored nuclear waste, based on the Eagle Eye machine vision system. Kinetic Sciences Inc. is also supplying tentacle manipulators for decontamination of radioactive Department of Energy facilities.

KSI has also developed a robot navigation system based on the Eagle Eye vision system, to inspect the B-2 Stealth aircraft for Northrop Grumman and the U.S. Air Force.

NSERC Researcher

The Eagle Eye Vision System is a licensed technology from the University of British Columbia, developed by computer science professor David Lowe. Dr. Lowe has received several NSERC research grants for the past eight years. His current research involves visual recognition through learned models and indexing. He is also a member of the Institute for Robotics and Intelligent Systems (IRIS), a Network of Centres of Excellence.

LEGASYS CORPORATION

CHIEF EXECUTIVE OFFICER
Kevin Schneider

ADDRESS
366 King Street East
Kingston, Ontario
K7K 6Y3

TELEPHONE
(613) 545-9454

FAX
(613) 545-1477

EMAIL
legasys@legasys.on.ca

ANNUAL REVENUE
Confidential

NUMBER OF EMPLOYEES IN CANADA
21

YEAR INCORPORATED
1995

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Information Technology

WEB SITE
www.ls-2000.com

PRODUCT OR SERVICE

A member of the DRI Legasys Group, Legasys Corporation develops and maintains software system design recovery, analysis and migration systems, including DRI Legasys' industry-leading LS/2000 Year 2000 solution. Using leading-edge formal methods including proprietary design recovery, source code transformation and version integration technologies, Legasys' mission is to lead the industry in automated software engineering.

In the immediate term, Legasys' efforts are focussed on solving the Year 2000 problem, a major difficulty that must be faced by almost all businesses and institutions with large computer systems. Caused by the fact that these systems often use a 2-digit year when representing dates, for example representing the 20th of February 1997 as 970220, this problem is a potential catastrophe for both government and industry, and a particular risk for the financial industry, primary clients of DRI Legasys' LS/2000 solution. LS/2000 sets the industry standard for Year 2000 source code analysis, and automatically implements a Year 2000 "hot spot" identification and conversion strategy for systems written in COBOL, RPG and PL/I. LS/2000's unique static sliding window conversion implements a just-in-time conversion strategy that minimizes risk by precisely identifying and locally changing only those exact few lines of code that actually present a Year 2000 risk, while avoiding risky and expensive data format changes.

LS/2000 services have been used by the Bank of Nova Scotia, the Royal Bank of Canada, the Toronto Dominion Bank, Inverlat Banco (Mexico), Maduro & Curiel's Bank (Curacao), and many others on every continent in the world. Exclusively licensed to IBM in Canada, LS/2000 is represented internationally by PRT International, Format 2000, Hansa International, and several others. Over half a billion lines of source code analyzed and converted by LS/2000 have been Year 2000 tested and returned to production use.

NSERC RESEARCHER

Legasys was founded by NSERC researchers professors James Cordy and Donald Jardine, with Kevin Schneider, all of the Software Technology Laboratory at Queen's University. Supported by NSERC research, equipment and infrastructure grants, their many years of basic research on language processing, design recovery and source code transformation technology forms the foundation of Legasys' leadership in software engineering automation.

LES ENTREPRISES GIRO INC.

CHIEF EXECUTIVE OFFICER
Jean-Yves Blais

ADDRESS
75 Port-Royal East, Suite 500
Montreal, Quebec
H3L 3T1

TELEPHONE
(514) 383-0404

FAX
(514) 383-4971

EMAIL
info@giro.ca

ANNUAL REVENUE
$13,800,000

NUMBER OF EMPLOYEES IN CANADA
120

YEAR INCORPORATED
1979

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Transportation and Logistics

WEB SITE
www.giro.ca

PRODUCT OR SERVICE

Software created by Les entreprises GIRO Inc. is now being used in more than 175 cities in 22 countries on five continents. Large urban centres such as Sydney, Los Angeles, Singapore, Montreal and Brussels use the HASTUS software to design mass transit schedules (for vehicles and staff). Thanks to this software, public transit companies have substantially reduced operating costs and vehicle requirements (up to 5%). A new package, Gencol, helped GIRO secure a $2 million contract from Japan Rail East (Tokyo).

A GIRO subsidiary, LOGIROUTE, offers software for designing school transportation schedules and routes for delivery and waste management companies. Users of LOGIROUTE products include, among others, Canada Post Corporation and Toronto's Wheel-Trans, which uses the system for transporting mobility-impaired people.

GIRO products result from research carried out at the University of Montreal, HEC and UQAM.

NSERC RESEARCHER

GIRO was founded by Jean-Yves Blais and Jean-Marc Rousseau. The latter was a full professor and is now an associate professor in computer science and operational research at the University of Montreal. In the 1980s, Dr. Rousseau ran the Centre for Research on Transportation. In addition to his research on the problems of mass transit, he has collaborated with other researchers from the University of Montreal (Drs. Lapalme and Ferland) on systems being marketed by LOGIROUTE. LOGIROUTE has also licensed the Gencol technology developed by researchers Soumis and Desrosiers from École Polytechnique and École des Hautes Études Commerciales. Dr. Rousseau's research is supported by NSERC through strategic, research and infrastructure grants. GIRO employs many former NSERC award holders.

MacDonald Dettwiler and Associates Inc.

Chief Executive Officer
Daniel E. Friedmann

Address
13800 Commerce Parkway
Richmond, British Columbia
V6V 2J3

Telephone
(604) 278-3411

Fax
(604) 278-4716

Email
sales@mda.ca

Annual Revenue
$142,000,000 (1999)

Number of Employees in Canada
1,400

Year Incorporated
1969

Principal Markets
International

Industrial Sector
Info. Systems, Observation & Sensing, Defence

Web Site
www.mda.ca

Product or Service

MacDonald, Dettwiler and Associates Ltd.(MDA) is one of Canada's leading information companies, providing customers around the world with systems and services for the following markets: Earth observation, land information, space, defence, transportation, and business. MDA has exported products and services to over 35 nations around the world and has installed over 85% of the world's civilian Earth observation ground stations. The company is structured into four main areas: space missions, systems, services, and electronic commerce.

MDA was selected by the Canadian Space Agency to negotiate as prime contractor and owner of Canada's RADARSAT-2 satellite, scheduled for launch and operation in 2001. As such, MDA is responsible for systems design, development, construction, launch, operation and data commercialization.

In 1999, the company acquired the robotics division of Spar Aerospace, developers of the Canadarm for NASA. It also acquired RADARSAT International, worldwide distributors of satellite imagery for mapping, environmental monitoring, and disaster management applications.

NSERC Researcher

MDA was co-founded by Vern Dettwiler and John MacDonald. Dr. Dettwiler is an expert in computer systems engineering and digital communications. He was head of the New Projects Unit at the University of British Columbia's Computing Centre from 1966-1971. Dr. MacDonald specializes in remote sensing and image processing. He was an electrical engineering professor at UBC and one of the founding members of the B.C. Science Council. Dr. Dettwiler received NSERC (NRC) support through research (operating) grants. NSERC, MDA, and the BC Advanced Systems Institute jointly fund Dr. Ian Cumming's Industrial Research Chair in Radar Remote Sensing and Signal Processing.

MathResources Inc.

Chief Executive Officer
Ron Fitzgerald

Address
5516 Spring Garden Road, Suite 203
Halifax, Nova Scotia
B3J 1G6

Telephone
(902) 429-1323

Fax
(902) 492-7101

Email
rfitz@istar.ca

Annual Revenue
Confidential

Number of Employees in Canada
8-12

Year Incorporated
1996

Principal Markets
International

Industrial Sector
Education

Web Site
www.mathresources.com

Product or Service

Mathematics is the language of high technology and MathResources Inc. is helping students to become more fluent in that language. MathResources currently has three products available. The MathResource: Interactive Mathematics Dictionary combines a comprehensive database of over 5000 fully searchable entries with the power of the symbolic math engine, Maple. This CD-ROM is an outstanding tool for student investigations, a powerful presentation tool for teachers and a comprehensive reference tool for anyone that uses or studies mathematics. The MathProbe is software for teachers and students in Grades 5 to 10. It combines over 140 interactive math tools, extensive graphing capability and a graphing calculator with a language database of over 900 terms and definitions. It provides tremendous flexibility for teachers to illustrate the power of mathematics and for students to visualize and explore mathematics in a dynamic environment. The MRI-Graphing Calculator is a CD-ROM that emulates the power of the more intricate and expensive hand-held graphing calculators available today. The power of the computer makes this software considerably more robust. It is also more intuitive to use and much less expensive, providing a tremendous alternative for students and teachers.

Whether a student is in middle school or high school or pursuing an education in civil engineering or botany, a strong foundation in mathematics is fundamental. The products of MathResources make acquiring this foundation a little easier.

NSERC Researcher

Drs. Jon Borwein and Carolyn Watters and Mr. Ephraim Borowski founded MathResources. Dr. Borwein is a professor of mathematics and statistics at Simon Fraser University, and was formerly at Dalhousie University. He is a member of the National Network for Collaboration in Mathematical Sciences. Dr. Watters is an associate professor of computer science at DalTech, and a member of the Telelearning Network. Mr. Borowski is a professor of the philosophy of mathematics at the University of Glasgow. He and Dr. Borwein published the HarperCollins Dictionary of Mathematics in 1991. Drs. Borwein and Watters receive NSERC research grants.

MDS SCIEX, DIV. OF MDS INC.

CHIEF EXECUTIVE OFFICER
W.C. Garriock

ADDRESS
71 Four Valley Drive
Concord, Ontario
L4K 4V8

TELEPHONE
(905) 660-9005

FAX
(905) 660-2600

EMAIL
info@mdsintl.com

ANNUAL REVENUE
$81,000,000

NUMBER OF EMPLOYEES IN CANADA
320

YEAR INCORPORATED
1974

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Scientific Instrumentation

WEB SITE
www.mdsintl.com
AND
www.pebio.com/sc/

PRODUCT OR SERVICE

MDS SCIEX designs, manufactures, and markets specialized mass spectrometry instruments which are used in more than 50 countries. The instruments are broken down into two major product lines: the Elan series for elemental analysis and the API series for organic and bio-organic analysis. Both technologies were pioneered through relationships with the University of Toronto Institute for Aerospace Studies.

The ELAN 6000 is a market leader in clinical, geological, semi-conductor and environmental assays involving elemental analysis. Over 1,000 ELAN units have been installed world-wide.

The API 150, 2000 and 3000 systems are used extensively in the pharmaceutical, biotechnology, and polymer markets. As the market leader servicing the pharmaceutical industry, SCIEX API systems continue to improve methods in drug discovery, clinical trials, and quality control. There is presently an installed base of over 1,300 API systems, with over 90% installed outside Canada.

NSERC RESEARCHER

SCIEX was incorporated in 1974 by a team of researchers at the University of Toronto headed by Dr. Barry French, a professor at the Institute for Aerospace Studies. Dr. French's research into the detection of trace substances has been supported by research and equipment grants from NSERC. SCIEX contributes to the development of Canadian researchers through its involvement in NSERC's industrial research fellowships program. In 1995 it co-sponsored the NSERC-SCIEX industrial research chair in Scientific Instrumentation at the University of British Columbia.

SCIEX is an industrial partner with NSERC in funding four other major projects at Canadian universities, and supports several other Canadian university laboratories and research institutes.

Millenium Biologix Inc.

Chief Executive Officer
Sydney Pugh

Address
785 Midpark Dr., Suite 200
Kingston, Ontario
K7M 7G3

Telephone
(613) 389-6565

Fax
(613) 389-6625

Email
mbi@millenium-biologix.com

Annual Revenue
$1,300,000

Number of Employees in Canada
12

Year Incorporated
1992

Principal Markets
International

Industrial Sector
Pharmaceuticals, Medicine

Web Site
www.millenium-biologix.com

Product or Service

Millenium Biologix Inc. is developing a biomaterial that will make healing from bone loss much easier. Bone loss may be caused by a disease, such as cancer, or by a traumatic accident. With a similar chemistry and physical structure to real bone, Millenium's synthetic bone material is bioactive, which means that the body treats it as if it was natural. Since the body accepts the material well, it can be used to replace normal tissue during the healing process. This material stimulates normal biological processes that speed healing and attracts bone growth proteins and many of the drugs used to treat osteoporosis and other bone diseases. As healing takes place, the synthetic bone is gradually and safely reabsorbed into the body and replaced by new and healthy bone cells. Millenium's product is in a class of materials already recognized and well accepted by international regulatory agencies, so approval is not expected to be as complex as it is for many other health products. Millenium's synthetic bone is currently used in the research and pre-clinical trial markets in a diagnostic product line for testing treatments for bones diseases. Further research has produced implantable versions of the technology for the orthopedic, dental, and biotechnology markets. Initial tests have been favorable, showing that the material promotes rapid healing and long-term stability.

NSERC Researcher

Millenium's bone material was co-invented by Drs. Mike Sayer and John Davies. Dr. Sayer is a professor of solid state physics at Queen's University. Dr. John Davies is a professor of biomaterials at the University of Toronto. Their research and collaboration resulted in the formation of Millenium. Both researchers have received NSERC support for their work on biomaterials.

MycoLogic Inc.

Chief Executive Officer
Dr. William Hintz

Address
c/o Innovation and Development Corp.
University of Victoria
PO Box 1700
Victoria, British Columbia
V8W 2Y2

Telephone
(250) 721-6500

Fax
(250) 721-6497

Email
whintz@uvic.ca

Annual Revenue
Confidential

Number of Employees in Canada
7-9

Year Incorporated
1994

Principal Markets
North America

Industrial Sector
Environment

Web Site
http://web.uvic.ca/idc/mycologi.html

Product or Service

MycoLogic Inc. is clearing the way for safe and effective control of forest weeds. MycoLogic has developed ECO-clear, a bio-herbicide that uses pathogenic fungi to eradicate troublesome plant life. The treatment is non-toxic to people, animals, and non-targeted plants. It does not build up in the environment and its effects are limited to the area where it is applied. There is already a substantial market for ECO-clear. To maintain hydro lines, access routes must be kept clear, a job that costs millions of dollars every year. Current strategies involve cutting, burning, or treating brush with chemical herbicides. These practices can be costly, dangerous, and damaging to the environment. ECO-clear is cost-effective and safe. It will also be useful for maintaining highways, railways, and paths around pipelines. Trials are near completion and ECO-clear should be on the market by 1998. Mycologic has other ecologically sound products for forestry and agriculture under development.

NSERC Researcher

MycoLogic was founded by Dr. William Hintz, an associate professor of biology at the University of Victoria, specializing in plant pathogens and genetics. He has done extensive research in collaboration with the Canadian Forestry Service's researchers Drs. Ron Wall and Simon Shamoun. Dr. Hintz's work is supported through NSERC research grants. NSERC and B.C. Hydro supported an industrially oriented research project to develop the mycoherbicide.

Mycota Biosciences Inc.

Chief Executive Officer
Dr. Howard Bussey

Address
1550 Metcalfe Street, Suite 502
Montreal, Quebec
H3A 1X6

Telephone
(514) 398-6439

Fax
(514) 398-2595

Email
mycota@monod.biol.mcgill.ca

Annual Revenue
Confidential

Number of Employees in Canada
10

Year Incorporated
1999

Principal Markets
International

Industrial Sector
Pharmaceuticals

Web Site
N/A

Product or Service

Mycota: noun, plural, Latin for fungi.
Mycota Biosciences: noun, singular Canadian drug discovery company.

For most of us, an encounter with Candida albicans is uncomfortable, but if you have a compromised immune system, beware: this infection can be lethal. Candida albicans, a form of yeast, is the most common fungal pathogen. For people with weakened immunity, such as cancer patients, a yeast infection is more likely to become systemic. At this point, candidiasis is more deadly than bacterial septicaemia. This is a growing problem; the Candida species is now the fourth most common blood-stream pathogen. While we have treatments, our options are limited. Today's drugs are toxic to the patient as well as the fungal agent. There is also a growing risk of drug resistance.

Mycota Biosciences is working towards new treatments for fungal infections. The company applies a combination of genomics and cell wall molecular biology to drug discovery. Mycota researchers are working to identify and validate a range of new drug targets in Candida albicans. The team will apply these findings to fungal-specific targets, in order to develop drug screens and a compound screening program. These screens and lead compounds will form the basis for partnerships with the pharmaceutical industry, ultimately resulting in new drug treatments.

Mycota's expertise will have applications beyond health care. Farmers have struggled with fungal infestations for centuries. Recently, the fungus that caused the Irish Potato Famine reappeared, this time showing signs of resistance to Metalaxyl, our best weapon against it. Metalaxyl-resistant strains of this fungus caused losses of nearly 20% of the U.S. potato crop in 1994. Mycota's expertise may lead to crop treatments that will prevent such agricultural disasters.

NSERC Researcher

Mycota Biosciences was created by five world-class scientists: Drs. Howard Bussey, Marc Lussier, and Terry Roemer of McGill University, Dr. Reginald Storms of Concordia, and Dr. Charles Boone at Queen's. Dr. Bussey and Dr. Storms worked on an international project to sequence the yeast genome, supported by an NSERC collaborative project grant. Drs. Bussey, Storms, and Boone also receive NSERC research grants.

NEC Moli Energy (Canada) Ltd.

Chief Executive Officer
Tadatoshi Shiba
(President)

Address
20000 Stewart Crescent
Maple Ridge, British Columbia
V2X 9E7

Telephone
(604) 466-6654

Fax
(604) 466-6600

Email
N/A

Annual Revenue
Confidential

Number of Employees in Canada
350

Year Incorporated
1990

Principal Markets
Asia, North America

Industrial Sector
Manufacturing

Web Site
www.necmolienergy.co.jp

Product or Service
As technologies become portable, a recurring problem has been finding a small, powerful battery that can be recharged a number of times. NEC Moli Energy has found the answer – a rechargeable lithium-ion battery called the "MOLICEL." MOLICELs are used for portable computers, video cameras, cell phones, medical devices, and military applications. Approximately 1.5 million MOLICELs are produced every month. In 1990, Moli Energy was bought by Japanese manufacturing giants NEC and Mitsui & Co. Ltd.

NSERC Researcher
The development of the original metal lithium-type MOLICEL began in the early 1980s in Dr. Rudolph Haering's lab at the University of British Columbia. One of Dr. Haering' s students, Dr. Jeff Dahn of Simon Fraser University, continued the research which resulted in the new lithium-ion technology-based MOLICEL now in production. Both researchers were funded by NSERC for their work on lithium batteries.

NéoKimia Inc.

Chief Executive Officer
Dr. Pierre Deslongchamps

Address
3001 – 12th Avenue N
Fleurimont, Quebec
J1H 5N4

Telephone
(819) 820-6840

Fax
(819) 820-6841

Email
pierre.deslongchamps
@courrier.usherb.ca

Annual Revenue
Confidential

Number of Employees in Canada
18

Year Incorporated
1996

Principal Markets
International

Industrial Sector
Pharmaceutical Industry

Web Site
N/A

Product or Service

NéoKimia is helping to speed up drug discovery, one molecule at a time. This company is using patented techniques in combinatorial chemistry and parallel synthesis to develop customized libraries of bioactive molecules. Combinatorial chemistry assembles chemical building blocks in every conceivable combination. Parallel synthesis allows the process of creating chemical reactions to be automated. Together, they form a powerful tool for establishing very large libraries of molecules of potential medicinal value. Each entry in the library will be matched against a target, a protein or molecule implicated in a disease. Pharmaceutical companies will be able to identify compounds that show promise in the treatment of disease quickly and affordably. Developing a new medicine is a very expensive process, so investment in this exploratory phase is critical. NéoKimia's specialized databases will help to increase the success rate for the selection of drug candidates, and may ultimately hasten an end to the suffering of people with serious illnesses.

NSERC Researcher

NéoKimia was founded by Dr. Pierre Deslongchamps, a professor of chemistry at the University of Sherbrooke. One of Canada's most celebrated researchers, Dr. Deslongchamps has received many important international honours; he was made a Fellow of the Royal Society in 1983 and a Member of the Academy of Science of Paris in 1995. In 1993, Dr. Deslongchamps was awarded Canada's top honour for researchers, the Canada Gold Medal for Science and Engineering. Dr. Deslongchamps receives NSERC funding for his work through research, university-industry, and equipment grants.

New Orbit Technologies Inc.

Chief Executive Officer
Dr. Barna Szabados

Address
1505 Bathgate Road
Mississauga, Ontario
L5M 4B2

Telephone
(905) 525-9140 ext 24969

Fax
(905) 525-1276

Email
szabados@mcmaster.ca

Annual Revenue
$350,000

Number of Employees in Canada
3

Year Incorporated
1988

Principal Markets
Canada

Industrial Sector
Utilities, Power Systems, Instrumentation

Web Site
N/A

Product or Service

Thanks to New Orbit Technologies Inc., Ontario Hydro saved hundreds of thousands of dollars by modifying some of their aging transformers rather than replacing them, and by using them at higher power ratings than they were designed for. This company has developed an effective method for predicting losses in tank walls and magnetic structures in large transformers, which allows design to be optimized. Another major client was Westinghouse Canada Inc. Their motor division benefited from introducing advanced CAD design and motor testing. The company also designed and installed a new electronic inter-plant communication system and data bank exchange.

In the past two years the company has developed special microprocessor-controlled dimmers for standard magnetic ballast fluorescent lighting for a Mississauga-based company, Elorah. This allows installations to save up to 50% on power, without modifying any circuitry. Recently the company developed another method of controlling fluorescent lighting (patent pending) in partnership with a Burlington-based company; a revolutionary product is expected to emerge by 1999. The anticipated system will permit drastic power management schemes in office buildings, factory floors, and street or highway lighting, realizing enormous power savings while maintaining quality and reliability on the power system.

The company has also been active in developing instrumentation software such as a PC-driven real-time oscilloscope (up to 80KHz acquisition), and various other software tools for distant education multimedia technology, both in software engines (expert system testing) and courseware in Power Electronics.

NSERC Researcher

The founder of New Orbit Technologies is Barna Szabados, an electrical and computer engineering professor at McMaster University. NSERC supports Dr. Szabados' research through research and collaborative research and development grants. Dr. Szabados and his colleagues are currently developing a multimedia software system with JAVA engine, allowing remote hardware control of a laboratory, as well as special teaching techniques in multimedia.

Nexia Biotechnologies Inc.

Chief Executive Officer
Dr. Jeffrey Turner

Address
21, 025 Trans-Canada Highway
Sainte-Anne-de-Bellevue, Quebec
H9X 3R2

Telephone
(514) 457-4522

Fax
(514) 457-6151

Email
info@nexiabiotech.com

Annual Revenue
Confidential

Number of Employees in Canada
38

Year Incorporated
1993

Principal Markets
Domestic, International

Industrial Sector
Pharma., Biomaterials, High Performance Fibres

Web Site
www.nexiabiotech.com

Product or Service

Nexia's core technology has been developed under the leadership of Drs. Jeffrey Turner, Costas Karatzas and Carol Keefer. They now form Nexia's scientific management group, and work in cooperation with several universities in Canada and around the world. They assembled a team of prominent scientists to create an integrated core technology platform which enables the company to produce highly complex proteins within the mammary glands of transgenic ruminant animals such as goats. Nexia will produce these complex proteins for use in clinical therapy, medical devices and high performance industrial engineering applications. Nexia holds four U.S. patents, with two others pending, covering both its production techniques and the resulting products.

Central to the company's success is its proprietary process for producing pharmaceutical products using BELE® goats (Breed Early Lactate Early). These goats breed at a very young age, reproduce quickly and produce milk at a very early stage in the reproductive cycle. The result is that the genes of a specific protein can be introduced into the genetics of the goats, where they direct the production of the novel protein in the milk. The August 1998 birth of Willow, Canada's first transgenic livestock, confirmed this technology platform.

Nexia's BioSteel® program focuses on the manufacture of recombinant spider silk for applications in medicine, fashion, and industrial components, where the combination of strength, lightness, and flexibility are prized.

NSERC Researcher

Dr. Jeffrey Turner founded this company in 1993 and has served as President and CEO since. Formerly an associate professor of animal science at McGill University, Dr. Turner is a specialist in mammalian cell culture and has performed extensive research with dairy cattle. Dr. Turner's research at McGill was supported by NSERC through research grants and a collaborative research and development grant. Dr. Turner resigned his tenured position at McGill University to utilize his research findings to produce high-value recombinant proteins.

NORTHERN RADAR INC.

CHIEF EXECUTIVE OFFICER
Barry J. Dawe

ADDRESS
25 Anderson Avenue
P.O. Box 23039
St. John's, Newfoundland
A1B 4J9

TELEPHONE
(709) 739-4014

FAX
(709) 739-4514

EMAIL
bjdawe@thezone.net

ANNUAL REVENUE
Confidential

NUMBER OF EMPLOYEES IN CANADA
7

YEAR INCORPORATED
1986

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Navigation

WEB SITE
N/A

PRODUCT OR SERVICE

Northern Radar Inc. has developed a state-of-the-art Surface Wave Radar (SWR) System which can monitor over 225,000 square kilometres of the ocean surface and provide timely activity reports. The task of surveillance of an Exclusive Economic Zone (EEZ), requiring observation of millions of square kilometres of ocean, can benefit tremendously from using Northern's SWR technology. The SWR technology can detect icebergs, measure ocean waves, monitor surface currents, track low flying aircraft, and track vessels located up to 450 kilometres from shore. SWR systems transmit at frequencies in the HF frequency band, at frequencies several orders of magnitude lower than traditional radar systems. The ocean surface is highly conductive which effectively "guides" vertical polarized HF radio signals with very low attenuation. As a result HF SWR systems can provide coverage to 250 nautical miles range. The versatility of the system has attracted the interest of industry, government, and academia. Oil companies use the system to follow ocean wave conditions to protect their offshore rigs. Information about surface currents helps biologists estimating fish stocks and Search and Rescue teams tracking lifeboats. The Northern Radar technology is more affordable than satellite systems and is able to operate in real time, with continuous coverage of the monitored zone.

NSERC RESEARCHER

Northern Radar's ground wave radar system was developed by Dr. John Walsh, a professor at the Centre for Cold Ocean Resources Engineering and at Memorial University. Dr. Walsh has investigated ground wave radar systems since 1981, with the support of NSERC research, strategic, and collaborative research and development grants.

Ocean Nutrition Canada Ltd. (fka LAER Products)

Chief Executive Officer
Robert Orr (General Manager)

Address
757 Bedford Highway
Bedford, Nova Scotia
B4A 3Z7

Telephone
(902) 457-2399

Fax
(902) 457-2357

Email
info@ocean-nutrition.com

Annual Revenue
Confidential

Number of Employees in Canada
29

Year Incorporated
1987

Principal Markets
North America, Asia

Industrial Sector
Health and Nutrition, Pharmaceuticals & Medicine

Web Site
www.ocean-nutrition.com

Product or Service

Ocean Nutrition Canada Ltd. leads the way in the research, development and manufacture of marine-based health and nutritional products that offer proven efficacy, safety, unsurpassed quality and consumer value.

The foundation for the Ocean Nutrition Canada line of marine-based health and nutritional products is Natra-Sea 6000. Natra-Sea 6000 is a naturally concentrated fish oil with double the omega-3 content of most other fish oil products on the market today. Natra-Sea 6000 is also the ONLY clinically proven concentrated omega-3 fish oil, backed by a 5-year safety study and nine years of clinical trials to prove its effectiveness. Ocean Nutrition Canada developed condition specific supplements such as Cardio-Nutrition, Joint Nutrition, and Essential Need, each with Natra-Sea 6000 oil as the primary ingredient.

NSERC Researcher

The distillation technology used by Ocean Nutrition Canada was developed by Robert Ackman, an authority on marine oils at the Canadian Institute of Fisheries Technology, Technical University of Nova Scotia (now DalTech). He has received NSERC support, including equipment and strategic grants, for many of his projects. Currently, Dr. Ackman is investigating the interaction of tocopherols and ethyoxiquin in salmon aquaculture, funded by an NSERC research grant.

Open Text Corporation

Chief Executive Officer
Tom Jenkins

Address
185 Columbia Street West
Waterloo, Ontario
N2L 5Z5

Telephone
(519) 888-7111

Fax
(519) 888-0677

Email
info@opentext.com

Annual Revenue
$45,300,000 (U.S.)

Number of Employees in Canada
140 in Canada (590 worldwide)

Year Incorporated
1991

Principal Markets
International

Industrial Sector
Information Technology, Knowledge Management

Web Site
www.opentext.com

Product or Service

Open Text Corporation is the world leader in "collaborative knowledge management," an emerging market for intranet-based software. This new product category combines the technology and ubiquity of the Web, with a powerful collaborative environment that lets virtual teams create, share, find, and manage information, as well as track and monitor progress toward meeting their organizations' business objectives.

"Knowledge management," or KM, is the set of practices and technology by which organizations derive maximum benefit from their most strategic asset — knowledge. For a KM system to be effective, it must have three basic elements: a knowledge gathering system, a knowledge distribution system, and a collaborative knowledge user system. Open Text's Livelink Intranet is the industry's first KM software to integrate all three components in a package that is ready to install out of the box. Livelink transforms intranets into collaborative KM systems, helping organizations discover where their knowledge is, capture it, share it, and make it secure.

More than 3,400 corporations use Open Text products, shortening product development cycles, improving quality, delivering better customer service and value, and increasing profits. Over 50 value-added resellers and Solution Providers have joined Open Text's Livelink Affinity Partner Program in less than one year. Partners include industry leaders Adobe, Canon Japan, Microsoft, Netscape Communications, Jetform, Nissho Iwai, Oracle, Siemens Nixdorf, and Unisys.

NSERC Researcher

The original technology (the text database management system with the fastest search engine available — searching through 60 million words per second) was developed as part of a collaborative research and development project, conducted by Frank Tompa and Gaston Gonnet. It was funded jointly by NSERC and Oxford University Press, with additional support from the University of Waterloo and private foundations. Dr. Tompa is a computer science professor at the University of Waterloo. He continues to research data management and structuring and recently completed an NSERC industrially oriented research project with Bell Northern Research and IBM. Dr. Gonnet is also a professor at Waterloo and is currently pursuing research projects at the Swiss Federal Institute of Technology in Zurich.

Optech Incorporated

Chief Executive Officer
Dr. Allan Carswell

Address
100 Wildcat Road
North York, Ontario
M3J 2Z9

Telephone
(416) 661-5904

Fax
(416) 661-4168

Email
general@optech.on.ca

Annual Revenue
Confidential

Number of Employees in Canada
90

Year Incorporated
1974, 1986

Principal Markets
International

Industrial Sector
Imaging Systems

Web Site
www.optech.on.ca

Product or Service

Optech Inc. has developed the world's first operational airborne lidar bathymeter, used for precise measurements of marine topography. The Shoals-Hawkeye system, based on early research done at York University, has won Optech an international clientele. The customers for Optech's products include research institutes, mining and industrial corporations, and military and environmental agencies. Optech offers a variety of laser radar systems with surveying, environmental, industrial, and transportation applications. Optech has strategic alliances with a number of international collaborators. Ninety percent of Optech's business is export, with about three quarters of the world market for commercial airborne laser survey systems. In 1994, the company received the Canadian Award for Business Excellence in Innovation.

NSERC Researcher

Allan Carswell, an emeritus physics professor at York University, founded Optech Inc. in 1974 to commercialize his research findings on optical radar systems. Dr. Carswell's early research was funded by NRC and, over the years, NSERC has provided consistent support through research grants.

Performance Plants Inc.

Chief Executive Officer
Dr. David Dennis

Address
BioSciences Complex
Queen's University
Kingston, Ontario
K7L 3N6

Telephone
(613) 545-0390

Fax
(613) 545-3618

Email
dennisd@biology.queensu.ca

Annual Revenue
Confidential

Number of Employees in Canada
28

Year Incorporated
1995

Principal Markets
North America

Industrial Sector
Food and Agriculture

Web Site
http://ppi.biology.queensu.ca

Product or Service

Performance Plants Inc. brings Canadian crop advances to the world market. The company's suite of technologies will increase agricultural productivity and help to keep Canada competitive. Its main product lines are crops with enhanced commercial value and improved climate resistance. Performance Plants' repertoire includes drought-tolerant canola and forage crops, and plants that photosynthesize in low light conditions. Performance Plants also offers feedstock with reduced fibre and oil seeds with enhanced oil synthesis. Many of these technologies were developed at Queen's University, but the company also acquires technology from other universities, Agriculture Canada, and the National Research Council. To ensure that these innovative products reach the widest possible market, the company has strategic alliances with larger businesses.

NSERC Researcher

Performance Plants Inc. was formed by Drs. David Dennis and Daniel Lefebvre, both faculty members from the Department of Biology at Queen's University. Performance Plants rents research and growth facilities associated with the BioSciences Complex at Queen's in Kingston and similar facilities associated with Innovation Place in Saskatoon. The research team includes molecular biologists, plant physiologists, and biochemists from Queen's University and elsewhere. The team collaborates extensively with researchers at Agriculture and Agri-Food Canada and NRC's Plant Biotechnology Institute. The group is supported by a variety of NSERC grants. Dr. Dennis recently held an NSERC industrially oriented research project grant, co-sponsored by the Canola Council of Canada, and several members of the team are supported by NSERC industrial postdoctoral fellowships and postgraduate scholarships.

PHERO TECH INC.

CHIEF EXECUTIVE OFFICER
Stephen Burke, David Wakarchuk

ADDRESS
7572 Progress Way
Delta, British Columbia
V4G 1E9

TELEPHONE
(604) 940-9944

FAX
(604) 940-9433

EMAIL
admin@pherotech.com

ANNUAL REVENUE
Confidential

NUMBER OF EMPLOYEES IN CANADA
22

YEAR INCORPORATED
1982

PRINCIPAL MARKETS
The Americas, Europe, Australia, New Zealand

INDUSTRIAL SECTOR
Forestry, Agriculture & Environment

WEB SITE
www.pherotech.com

PRODUCT OR SERVICE

Phero Tech is a world leader in the development, manufacture, and sale of semiochemical products for forestry and agriculture. Semiochemicals are message-bearing chemicals that insects and other organisms use for communication purposes. In pest control applications, semiochemical lures and traps can be used to monitor pest populations or to mass trap pests as a means of population reduction. Phero Tech manufactures and markets QMP, a complex pheromone mixture from the queen honey bee mandibular gland. Phero Tech QMP is the active ingredient in Fruit Boost, a pollination aid for fruit crops, as well as Bee Boost, a product used to manipulate bee behaviour. Phero Tech maintains a laboratory used for semiochemical synthesis, formulation and analysis, as well as a lure and trap manufacturing facility.

Phero Tech resource management services has grown along with the business since 1982. Consulting services for Forest Health Management, Geographic Information Systems (GIS) and Wood Borer Management Programs are provided to a variety of resource management clients as decision support tools. For example, Phero Tech has hazard-rated many Forest Districts and parks in British Columbia for insect pests and diseases.

NSERC RESEARCHER

Throughout its history, Phero Tech has collaborated with leading semiochemical researchers and has many commercial products spawned from research results. One of the most beneficial collaborations has been with the Chemical Ecology Group at Simon Fraser University (SFU), headed by Dr. John Borden. Phero Tech, along with the Science Council of British Columbia and NSERC, support an industrial research chair at SFU that is currently in its second five-year term. The industrial research chair is an excellent example of a synergistic relationship between industry, the university, and NSERC. Additional support from NSERC has included six collaborative research and development grants and an industrial research fellowship. The National Research Council (NRC) is currently providing support to Phero Tech under the Industrial Research Assistance Program, for research into the development of biorational products for use as herbivore browsing deterrents.

PHILIPS ANALYTICAL (FKA WATERLOO SCIENTIFIC INC.)

CHIEF EXECUTIVE OFFICER
Ken Mitchell (General Manager)

ADDRESS
101 Randall Drive
Waterloo, Ontario
N2V 1C5

TELEPHONE
(519) 746-6260

FAX
(519) 746-8270

EMAIL
N/A

ANNUAL REVENUE
Confidential

NUMBER OF EMPLOYEES IN CANADA
31

YEAR INCORPORATED
1996

PRINCIPAL MARKETS
Canada, U.S., Europe, Japan

INDUSTRIAL SECTOR
Manufacturing

WEB SITE
N/A

PRODUCT OR SERVICE

Waterloo Scientific Inc. (WSI) is a spin-off of research on scanning-stage laser microscopes done at the University of Waterloo. Although the original research was aimed at evaluating solar cells, the technology it spawned is now being used for process and quality control in the compound semiconductor industry. Waterloo Scientific has also developed a double crystal x-ray diffractometer and an instrument to measure the resistivity of semi-insulating substrates. All the company products are non-contact and non-destructive and allow the precise spatial characterization of inhomogeneity in compound semiconductor wafers and epitaxial layers.

Waterloo Scientific was purchased by Philips Electronics Ltd effective May 1, 1996. The company now operates as Philips Analytical (Waterloo) (PAW), a division of Philips Electronics Ltd. All employees of WSI were hired by PAW.

NSERC RESEARCHER

Waterloo Scientific Inc. was founded in 1983 by Arthur E. Dixon, a physics professor at the University of Waterloo. Dr. Dixon continues his work on scanning laser microscopes, specifically for imaging large specimens in reflected light and influorescence. His research is supported by NSERC research grants.

Dr. Dixon is no longer associated with PAW.

PICTORIUS INC.

CHIEF EXECUTIVE OFFICER
Jesse Boudreau

ADDRESS
2000 Barrington Street, Suite 401
Halifax, Nova Scotia
B3J 3K1

TELEPHONE
(902) 492-2880

FAX
(902) 492-3409

EMAIL
sales@pictorius.com

ANNUAL REVENUE
$1,500,000

NUMBER OF EMPLOYEES IN CANADA
30

YEAR INCORPORATED
1995

PRINCIPAL MARKETS
North America, Europe, Asia

INDUSTRIAL SECTOR
Information Technology

WEB SITE
www.pictorius.com

PRODUCT OR SERVICE

Pictorius Inc. produced Prograph, a software development technology based on more than ten years of research and development into the commercial application of visual, object-oriented and dataflow programming methodologies to improve programmer productivity. Prograph is unique in that it is "completely visual," allowing programmers to create applications through the rapid assembly of networked icons into diagrams, each of which replaces traditional complex blocks of textual code.

Prograph is fully extensible, allowing the user to enhance and customize the environment by either adding to or modifying the supplied application framework. This feature of the technology has allowed the recent development of a powerful set of internet and intranet development tools (product name iNet Developer), which has been in commercial production since 1997.

Pictorius' customer list includes companies such as Boeing, Pfizer, Wells Fargo, Bergen Brunswig, MTV Europe, Nortel Networks, Wisconsin Power and Light, Raytheon, and British Petroleum.

NSERC RESEARCHER

Prograph was designed by Phil Cox and Tomasz Pietrzykowski of the School of Computer Science at the Technical University of Nova Scotia (now Daltech). Their research into object-oriented design was supported by NSERC research grants.

Platform Computing Corporation

Chief Executive Officer
Dr. Songnian Zhou

Address
3760 14th Avenue
Markham, Ontario
L3R 3T7

Telephone
(905) 948-8448

Fax
(905) 948-9975

Email
info@platform.com

Annual Revenue
$20,000,000

Number of Employees in Canada
60

Year Incorporated
1992

Principal Markets
North America, Europe, Asia

Industrial Sector
Information Technology

Web Site
www.platform.com

Product or Service

Platform Computing is widely acknowledged as the industry leader in Workload Management. Platform Computing is highly profitable, with revenues doubling each year. The Financial Post recently named the company to Canada's Fast 55, an index of the fastest growing companies in Canada. Since its inception, Platform Computing Corp. has grown from a staff of three in offices at the University of Toronto to a 110-strong company with offices around the globe.

University of Toronto professor Songnian Zhou developed technology that creates a "virtual supercomputer" out of a series of distributed computer systems. Called LSF, the system provides a remarkable improvement in computer efficiency. LSF has fast become the industry standard in workload management — by organizations that require vast stores of computing power, including Fortune 1,000 aerospace, automotive, semiconductor, computer, communications and even entertainment companies like PDI (makers of the movie ANTZ). These companies report staggering gains in the speed-to-market of their products, with project completion times improved by up to 40 per cent.

The primary activities of Platform Computing are the development, marketing and support of its software LSF Suite. It also supports LSF Inc., a virtual corporation encompassing a family of value-added resellers, system vendors, and software vendors, all of which enhance the LSF solution by providing marketing, integration, and local support around the world.

NSERC Researcher

Songnian Zhou, founder of Platform Computing and inventor of the LSF system, is a computer science professor at the University of Toronto. The prototype of the LSF system was tested and applied successfully at Bell Northern Research under a collaborative research and development project jointly funded by NSERC and BNR.

Polyphalt Inc.

Chief Executive Officer
Bruce Harbinson

Address
270 Yorkland Blvd., suite 125
North York, Ontario
M2J 5C9

Telephone
(416) 491-9292

Fax
(416) 491-9766

Email
corp@polyphalt.com

Annual Revenue
Confidential

Number of Employees in Canada
15

Year Incorporated
1992

Principal Markets
International

Industrial Sector
Infrastructure, Construction, Housing

Web Site
www.polyphalt.com

Product or Service

Polyphalt Inc.'s process technology uses virgin and recycled plastics and rubbers to enhance the performance and durability of asphalt. Asphalt modified by Polyphalt's technology can be used for diverse applications including paving materials, commercial and residential roofing products, and industrial coatings and sealants.

Polyphalt's proprietary processes create a physical and chemical structure throughout the asphalt which results in both high- and low-temperature performance improvements. The versatility of the technology allows asphalt to be modified to meet precise criteria for specific high-perfomance applications including extreme climatic and/or service conditions. Of great significance to industry is the excellent storage stability of Polyphalt modified asphalt, a feature that addresses major shortcomings associated with many other modified asphalts. The technical advantages of these engineered asphalt materials are complemented by the environmental and economic advantages of being able to incorporate recycled plastics and crumb rubber into the processes.

NSERC Researcher

The research team that developed Polyphalt's core technology was led by Dr. Raymond Woodhams, now a professor emeritus at the University of Toronto's Department of Chemical Engineering and Applied Science. NSERC has supported his research since the early 1980s with research and strategic grants, as well as numerous collaborative research and development grants. In addition to polymer modified asphalt technology, Dr. Woodhams' current research interests are self-reinforced plastics, polymers, and fire-retardant compounds for thermoplastics (a common plastic in home appliances, automobiles, and airplanes).

Process Simulations Ltd.

Chief Executive Officer
Dr. Zia Abdullah

Address
2386 East Mall, Suite 204
Vancouver, British Columbia
V6T 1Z4

Telephone
(604) 822-1490

Fax
(604) 822-1934

Email
bibeau@psl.bc.ca

Annual Revenue
$550,000

Number of Employees in Canada
5

Year Incorporated
1994

Principal Markets
North America, Europe

Industrial Sector
Manufacturing

Web Site
www.psl.bc.ca

Product or Service

Improved efficiency in the pulp and paper industry is the goal of Process Simulations Ltd. (PSL), a spin-off company of the University of British Columbia. The company's initial focus has been "black liquor" recovery boilers, the major bottleneck in the Kraft paper industry. These boilers burn the organic black liquor by-product of the pulp to generate energy and to recycle the inorganic component into the pulping cycle. Even small improvements in efficiency result in increased production at the mill.

Since its formation, PSL has expanded its modeling to include power boilers and biomass fuel boilers. PSL has also started new initiatives to develop models for papermachine headboxes, lime kilns, digesters, and drying kilns. Model development is rapidly underway and communication has been established with industry on these topics.

NSERC has played a key role with PSL in enabling research to be conducted at the University of British Columbia. In turn, the technology resulting from this effort quickly moves into industry with PSL tackling new and novel applications.

NSERC Researcher

Process Simulations Ltd. was founded by Martha Salcudean and Ian Gartshore of the University of British Columbia. They are continuing their research on Kraft pulp processes, supported by NSERC research grants.

PYROVAC INTERNATIONAL INC.

CHIEF EXECUTIVE OFFICER
Gilles Thibault (Director General)

ADDRESS
333 Franquet Street
Sainte-Foy, Quebec
G1P 4C7

TELEPHONE
(418) 652-2298 extension 640

FAX
(418) 652-2275

EMAIL
pyrovac@qbc.clic.net

ANNUAL REVENUE
Confidential

NUMBER OF EMPLOYEES IN CANADA
45

YEAR INCORPORATED
1990

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Environmental Technology, Waste Management and Treatment

WEB SITE
www.gch.ulaval.ca/~croy/

PRODUCT OR SERVICE

Pyrovac International Inc. offers an entirely new recycling solution to waste management by considering waste as a resource. ***Pyrocycling***™ is a technology based on vacuum pyrolysis, which enhances wastes such as worn tires and biomass residue, and permits decontamination of even the most polluted ground. The process transforms the bulk of organic matter in pyrolytic oils, the by-products being carbon-base and pyrolytic gas residues.

Depending on the application, it is possible to extract from the oils some phenolic and pharmaceutical compounds, fragrances and natural solvants such as dl-limonene. Oils and pyrolytic coal can be used as fuel. The solid residues derived from worn tires can be used as carbon black while the biomass pyrolysis produces charcoal used in the iron industry or can be transformed into activated carbon.

Pyrovac International Inc. is jointly owned by the Groupe Pyrovac inc. and by Ecosun b.v., an environmentally friendly electrical utility based in the Netherlands. Ecosun sells operating licenses for the process, while the Institut Pyrovac Inc. pursues fundamental and applied research in the field of vacuum pyrolysis and markets research and development services. Pyro Systèmes inc. offers engineering, project management, and start-up services for ***pyrocycling***™ plants. Pyrofab inc. is responsible for the construction of ***pyrocycling***™ protected equipments. Pyrofab, Institut Pyrovac and Pyro Systèmes are subsidiaries of the Groupe Pryovac inc. holding company.

NSERC RESEARCHER

Groupe Pyrovac and its subsidiary and affiliated companies were founded by Dr. Christian Roy in order to market the research undertaken by his group at Laval University, where he is a chemical engineering professor. In 1994, NSERC awarded him an E.W.R. Steacie Memorial Fellowship. Dr. Roy's research in vacuum pyrolysis is supported by NSERC strategic, research and equipment grants.

QLT PhotoTherapeutics Inc.

Chief Executive Officer
Dr. Julia Levy

Address
520 West Sixth Avenue
Vancouver, British Columbia
V5Z 4H5

Telephone
(604) 872-7881

Fax
(604) 875-0001

Email
ir@qlt-pdt.com

Annual Revenue
$5,200,000

Number of Employees in Canada
175

Year Incorporated
1981

Principal Markets
Canada, U.S, Western Europe

Industrial Sector
Pharmaceuticals

Web Site
www.qlt-pdt.com

Product or Service

This Vancouver company is the world leader in an exciting therapy called Photodynamic Therapy (PDT), which uses light-activated drugs to kill diseased cells. The success of QLT PhotoTherapeutics has its roots in research done at the University of British Columbia. The company specializes in light-activated drugs for the treatment of certain types of cancer, diseases of the eye, autoimmune and cardiovascular diseases. One such drug — Benzoporphyrin Derivative (BPD) — is now in several clinical trials for the treatment of such conditions as cancer, psoriasis, and age-related macular degeneration, the leading cause of blindness in the elderly. When injected into a patient, BPD accumulates in the diseased tissue to a greater extent than in healthy tissue. When a special light is shone on the diseased tissue, BPD releases a toxic form of oxygen that kills the cells. QLT's first product, Photofrin, has been approved by boards of health in Europe, Japan, and North America for the treatment of certain types of cancer.

NSERC Researcher

QLT PhotoTherapeutics' focus in PDT is founded on the research of microbiology professor Julia Levy and chemistry professor David Dolphin, both from the University of British Columbia. Drs. Dolphin and Levy first obtained an NSERC strategic grant in the mid-1980s to explore the commercial potential of BPD. Dr. Dolphin was awarded a five-year $3.2 million industrial research chair in photodynamic technology, funded jointly by NSERC, UBC, and QLT PhotoTherapeutics. Dr. Levy continues to explore new applications for PDT, supported by NSERC and QLT through a collaborative research and development grant.

Quantic Laboratories Inc.

Chief Executive Officer
Dr. Alvin Wexler

Address
1103 – 191 Lombard Avenue
Winnipeg, Manitoba
R3B 0X1

Telephone
(204) 942-4000

Fax
(204) 957-1158

Email
info@quantic-emc.com

Annual Revenue
Confidential

Number of Employees in Canada
Confidential

Year Incorporated
1983

Principal Markets
International

Industrial Sector
Electronic Design Automation

Web Site
www.quantic-emc.com

Product or Service

Manitoba's Quantic Laboratories Inc. has an impressive client list, including Siemens, Boeing, and Cisco. These companies come to Quantic for its simulation software for high-speed electronics systems. The software simulates system conditions under high-speed switching conditions. It predicts faults within the systems that need to be diagnosed and corrected when designing digital circuits. It also identifies electromagnetic emissions from equipment, i.e., the reason that passengers are asked to turn off their laptops upon aircraft takeoff and landing. The bottom line? A substantial reduction in the time and money spent on prototypes. Quantic is now launching a new simulation product, Omega PLUS, that runs on PCs as well as UNIX machines.

NSERC Researcher

The founder and president of Quantic Laboratories is Dr. Alvin Wexler, an electrical engineering professor and professor emeritus at the University of Manitoba. Dr. Wexler has received significant funding through NSERC research, and major equipment grants. His current research on Impedance Computer Tomography has potential applications ranging from locating buried land mines, to monitoring the containment of nuclear wastes, to identifying small breast tumours, hopefully, before they have begun to spread.

Quantum Technology Corp.

Chief Executive Officer
Dr. Calvin Winter

Address
1370 Alpha Lake Road, Unit 15
Whistler, British Columbia
V0N 1B1

Telephone
(604) 938-0030

Fax
(604) 938-0061

Email
quantum@quantum-technology.com

Annual Revenue
$1,000,000

Number of Employees in Canada
6

Year Incorporated
1981

Principal Markets
International

Industrial Sector
Scientific Equipment & Instrumentation

Web Site
www.quantum-technology.com

Product or Service

This privately held British Columbia company sells its high-technology refrigeration equipment that produces temperatures ranging from –196°C (nitrogen and air liquefiers) to –269°C (helium liquefiers) and below. These products are sold worldwide with excellent market acceptance in Canada, Europe, and the Middle East. The low-temperature scientific equipment is used for recycling helium and maintaining superconducting magnets at operating temperature, in medical Magnetic Resonance Imaging systems and many other research applications. Clients include university laboratories, government and corporate research laboratories and hospitals. The company is a spin-off of cryogenics research done at Simon Fraser University.

NSERC Researcher

Quantum Technology Corporation was co-founded by Simon Fraser University physics graduate students Calvin Winter and Ken Myrtle. They worked together with guidance and expert assistance from Professor Suso Gygax. Dr. Gygax has received NSERC research and equipment grants for research into low-temperature, solid-state physics and superconductivity. The initial proof of concept research on cryogenic refrigeration systems was supported by NSERC. Calvin Winter received NSERC 1967 postgraduate scholarships during his graduate studies at Princeton, McGill, and Simon Fraser Universities. Dr. Winter also received an NSERC postdoctoral fellowship to work with Professor Gygax.

Qubit Systems Inc.

Chief Executive Officer
Dr. David Layzell

Address
400 Bath Road, 2nd Floor
Kingston, Ontario
K7M 4Y4

Telephone
(613) 384-1977

Fax
(613) 384-9118

Email
info@qubitsystems.com

Annual Revenue
Confidential

Number of Employees in Canada
6

Year Incorporated
1995

Principal Markets
Confidential

Industrial Sector
Education, Scientific Equipment

Web Site
www.qubitsystems.com

Product or Service

Recent advances in sensor technology have made it possible to monitor atmospheric gases and biological processes with an accuracy and affordability that were inconceivable only a few years ago. Qubit Systems Inc. has incorporated these technologies into a range of high quality, integrated products for teaching and research in the biological sciences.

The educational arm of Qubit Systems concentrates on giving undergraduate students much needed hands-on experience in collecting and manipulating experimental data. A Qubit Systems educational laboratory package includes everything the students need to conduct experiments to illustrate important biological principles, or for self-directed original research. These packages are currently in use in over 300 educational institutions in more than 30 countries.

The research arm of Qubit Systems concentrates on pushing the limits of gas detection technology. Current research products include a differential oxygen analyzer that offers five times the sensitivity of competing analyzers, a convenient gas analysis bench for CO_2 and O_2 analysis and a family of gas sensors for military and civil defense use.

NSERC Researcher

Qubit Systems Inc. was founded by Dr. David Layzell, a professor of biology at Queen's University. Dr. Layzell is a plant physiologist specializing in nitrogen fixation. A former Steacie Fellow, Dr. Layzell receives supported through NSERC research and equipment grants.

Raylo Chemicals Ltd.

Chief Executive Officer
Wolfgang Muhs

Address
8045 Argyll Road
Edmonton, Alberta
T6C 4A9

Telephone
(403) 468-6060

Fax
(403) 468-4784

Email
m_colomb.raylo@laporteplc.com

Annual Revenue
$25-50 million

Number of Employees in Canada
175

Year Incorporated
1966

Principal Markets
U.S. Western Europe

Industrial Sector
Pharmaceuticals

Web Site
N/A

Product or Service

Raylo Chemicals Inc. is a custom chemical manufacturer serving the pharmaceutical and bio-pharmaceutical industries. The company provides research and chemical process development for the production of bulk pharmaceutical compounds and advanced intermediates used in toxicology studies, clinical trials, and commercial sales. Raylo became part of Laporte PLC, a British multinational in 1988.

NSERC Researcher

Raylo evolved from R & L Molecular Research Ltd., founded by Ray and Leo Lemieux. Dr. Ray Lemieux is a professor emeritus in the Department of Chemistry at the University of Alberta and was one of NSERC's top-funded researchers. His blood-antigen work inspired worldwide investigations in immunology, cancer, and AIDS research. In 1990, he received the King Faisal International Prize in Chemistry recognizing his efforts to apply findings in carbohydrate chemistry. In 1992, NSERC awarded Dr. Lemieux the Canada Gold Medal for Science and Engineering, acknowledging his outstanding contributions to Canadian research. Although officially retired, Dr. Lemieux is still an active researcher and continues his important studies on molecular recognition.

Real Numerix Ltd.

Chief Executive Officer
Dr. Wagdi Habashi

Address
1350 Sherbrooke Street West
Suite 1020
Montreal, Quebec
H3G 1J1

Telephone
(514) 935-6916

Fax
(514) 848-8601

Email
real.numerix@cfdlab.concordia.ca

Annual Revenue
Confidential

Number of Employees in Canada
6

Year Incorporated
1996

Principal Markets
North and South America, Europe

Industrial Sector
Aerospace Automotive, Manufacturing

Web Site
N/A

Product or Service

Real Numerix Ltd. provides unique services in the high-end of Computational Fluid Dynamics (CFD) simulation, based on modular software that, rather than replacing other CFD codes, simply adds to them to produce results unsurpassed for accuracy, multidisciplinarity and manpower cost-effectiveness.

A key software of Real Numerix is MOM3D, a revolutionary black-box Mesh Optimization Methodology for unstructured grids that couples the solution and adaptation processes to lead to solutions with controlled accuracy. A second software is FENSAP-ICE, a three-dimensional in-flight icing CFD code for complete aircraft and engines. FENSAP-ICE uses moving and adaptive grids to produce information of unprecedented detail on droplet impingement limits, ice accretion shapes, performance degradation and de-icing as well as anti-icing heat loads. The code has additional uses in aviation accident investigation and for in-flight icing simulators. Real Numerix also provides consulting services in multidisciplinary areas of CFD, such as Aero-acoustics, Aero-elasticity, Aero-heat transfer, and for calculating airwakes behind stationary superstructures such as skyscrapers, and bridges, and moving superstructures, such as ships and oil platforms for helicopter landing.

The company's current client list includes: Aerospatiale, Boeing, CAE, Computational Dynamics, Department of National Defence, ICEM-CFD Engineering, Pratt & Whitney Canada, Royal Navy, Transport Canada, United States Aviation Underwriters, and Westland Helicopters. Real Numerix is expanding in the automotive and industrial applications of CFD.

NSERC Researcher

Real Numerix was founded by Dr. Wagdi Habashi, a professor of mechanical engineering at Concordia University, where he heads the Computational Fluid Dynamics Laboratory. NSERC supports Dr. Habashi's research through research, strategic, and equipment grants. In 1988, NSERC awarded Dr. Habashi a Steacie Fellowship. His long-term collaboration with Pratt & Whitney Canada received an honourable mention in the 1995 NSERC-Conference Board University-Industry Synergy Awards.

Right Track CAD Corporation

Chief Executive Officer
Dr. Jonathan Rose

Address
720 Spadina Avenue, Suite 313
Toronto, Ontario
M5S 2T9

Telephone
(416) 964-1444

Fax
(416) 964-8231

Email
info@rtrack.com

Annual Revenue
$2,000,000

Number of Employees in Canada
10

Year Incorporated
1998

Principal Markets
International

Industrial Sector
Information Technology

Web Site
http://www.rtrack.com

Product or Service

It's a kind of architecture not found on city streets, but on the information highway. Right Track CAD Corporation develops architectures and software design tools for programmable logic devices (PLD). These computer chips are growing in popularity over conventional, custom-fabricated chips because they can be adapted to users' needs quickly and affordably. While a custom chip may take months to produce, a PLD can be programmed in minutes. These chips are found in all kinds of electronic systems, most commonly in the routers and switches that are the backbone of the Internet. However, to function well, PLDs demand good design, which is where Right Track comes in. The company is unrivalled for experience in PLD design architecture and software. Right Track offers computer-aided design (CAD) tools and design services to ensure that PLD vendors have the best chip architectures and/or software support for their devices. The company's client list includes leading PLD vendors Altera Corporation and Cypress Semiconductor Corporation.

NSERC Researcher

Right Track was founded by Dr. Jonathan Rose, Dr. Vaughn Betz, David Galloway and Jordan Swartz. Dr. Rose is a professor of electrical and computer engineering at the University of Toronto. His work is supported by NSERC through research, equipment and industrially oriented research grants, as well as a university research fellowship. Dr. Rose also received support for his research from Micronet, a Network of Centres of Excellence, and from Communications and Information Technology Ontario. Dr. Vaughn Betz received an NSERC 1967 science and engineering scholarship.

SATLANTIC INC.

CHIEF EXECUTIVE OFFICER
Dr. Marlon Lewis

ADDRESS
Richmond Terminal, Pier 9
3295 Barrington Street
Halifax, Nova Scotia
B3K 5X8

TELEPHONE
(902) 492-4780

FAX
(902) 492-4781

EMAIL
norman@satlantic.com

ANNUAL REVENUE
$2,500,000

NUMBER OF EMPLOYEES IN CANADA
40

YEAR INCORPORATED
1990

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Earth Observation, Space, Defense

WEB SITE
www.satlantic.com

PRODUCT OR SERVICE

Satlantic designs, manufactures, and markets Earth Observation devices and stations known for their ruggedness, precision, and affordability. Satlantic's optical systems feature highly sophisticated sensors primarily used in ocean environments. Monitoring changes in ocean conditions is simple, even in remote or stormy areas, using Satlantic sensors mounted on air-launched buoys. Satlantic also offers Synthetic Aperture Radar (SAR) workstations and is one of the only companies in the world to offer customers near-to-real-time throughput of SAR data. Satlantic's custom design division specializes in designing and manufacturing made-to-order instruments for marine applications, including both biological and physical oceanographic equipment. Satlantic has customers world wide, notably NASA, the Japanese Space Agency, and the U.S. Navy.

NSERC RESEARCHER

Marlon Lewis is a professor of oceanography at Dalhousie University where he is examining the potential of marine remote sensing for use in resource management. Dr. Lewis is also a member of the Canadian team of the Joint Global Ocean Flux Study, an international research project studying the ocean carbon cycle. NSERC supports his research through its collaborative project, strategic, and research grants programs. In 1996, Satlantic co-sponsored two NSERC industrial research chairs in ocean acoustic technology and environmental technology.

SCI-TEC Instruments Inc.

Chief Executive Officer
James Yuel

Address
1503 Fletcher Road
Saskatoon, Saskatchewan
S7M 5S5

Telephone
(306) 943-0101

Fax
(306) 978-2339

Email
info@sci-tec.com

Annual Revenue
$14,000,000

Number of Employees in Canada
93

Year Incorporated
1981

Principal Markets
International

Industrial Sector
Sensing Devices, Environment

Web Site
www.sci-tec.com

Product or Service

SCI-TEC Instruments Inc. designs and manufactures environmental monitoring equipment for customers in more than 60 countries. The company offers systems to measure air quality, solar radiation, and petro chemicals. Two of their main products are PetroTag and the Brewer Spectrophotometer. The oil and gas industry uses PetroTag for accurate readings of the mass, density and volume of fuel in storage tanks. These measurements help companies maintain storage tank inventories. Brewer Spectrophotometers monitor solar radiation and air quality. The Brewer measures levels of UVA and UVB light which compile the UV index. It also provides data used in studies of acid rain, global warming, and the condition of the ozone layer. Some of SCI-TEC's clients include Shell, Chevron, Intalco Aluminum, the Japan Meteorological Agency, and Global Atmosphere Watch.

Success has helped SCI-TEC to expand. In 1994 SCI-TEC bought the assets of ENO, a Russian firm that specialized in advanced electro-optic technology. Two years later it acquired Kipp & Zonen, a Dutch recording instrumentation company. Each of these acquisitions brought new products and new technology to SCI-TEC.

NSERC Researcher

SCI-TEC Instruments is a spin-off of SED Systems, itself a spin-off from the Space Engineering Division of the University of Saskatchewan's Department of Upper Atmospheric Physics. Drs. Balfour Currie and Alex Kavadas were instrumental in the formation of SED in 1972. Both researchers received funding from NSERC's predecessor, the National Research Council's Office of Grants and Scholarships. SCI-TEC continues to work closely with scientists at the Atmospheric Environmental Sciences (AES) division of Environment Canada in the improvement of existing products and the development of new products.

SED Systems Inc.

Chief Executive Officer
Ray Basler (General Manager)

Address
18 Innovation Boulevard
P.O. Box 1464
Saskatoon, Saskatchewan
S7K 3P7

Telephone
(306) 931-3425

Fax
(306) 933-1486

Email
marketing@sedsystems.ca

Annual Revenue
$40,000,000

Number of Employees in Canada
250

Year Incorporated
1972

Principal Markets
International

Industrial Sector
Satellite Communications, Earth Observation

Web Site
www.sedsystems.ca

Product or Service

SED provides ground-based systems and services to the international satellite industry. Products include: satellite gateways, feeder link stations, telemetry, tracking and command stations; satellite network control systems; mobility management systems, in-orbit test systems, carrier monitoring systems, and ground support equipment. Services include: a full range of turnkey support services, satellite operations services, and low-volume, high-quality custom manufacturing services.

A spin-off of the University of Saskatchewan, SED now employs 250 satellite industry professionals and serves satellite manufacturers, satellite operators and satellite communications service providers around the world. In 1990, SED became a wholly owned subsidiary of CALIAN Technology Ltd.

NSERC Researcher

SED began in 1965 as the Space Engineering Division of the University of Saskatchewan's Department of Upper Atmospheric Physics. Following the pioneering research of that team, headed by Dr. Balfour Currie, SED designed and constructed rocket instrumentation for upper atmospheric studies. Dr. Alex Kavadas, also an active researcher in the division, led SED to incorporation in 1972. In the 1960s, Drs. Kavadas and Currie received NRC funding (in the form of research and major installation grants) for their space-related research.

SemBioSys Genetics Inc.

Chief Executive Officer
Mr. Andrew Baum

Address
Suite 500, 3605 – 29th Street, East
Calgary, Alberta
T1Y 5W4

Telephone
(403) 250-5424

Fax
(403) 250-3886

Email
bauma@sembiosys.ca

Annual Revenue
Confidential

Number of Employees in Canada
22

Year Incorporated
1994

Principal Markets
International

Industrial Sector
Pharmaceuticals, Agriculture

Web Site
www.sembiosys.ca

Product or Service

The latest advances in agriculture are yielding crops for processing plants and drugstores, as well as supermarkets. SemBioSys Genetics Inc. is producing some of the newest crops for harvest — proteins and enzymes for the pharmaceutical, chemical, personal care, and food processing industries. Through a gene encoding the oleosin protein, common crops such as sunflower, canola, soybean, and flax can be made to carry other important proteins, which are easily extracted from the seeds. Using this patented process, the company has developed a variety of rapeseed that carries the anticoagulant hirudin and the cancer therapeutic interleukin-1. It has also produced a variety of industrial and food enzymes. SemBioSys recently formed a strategic partnership with DowElanco Canada.

NSERC Researcher

SemBioSys Genetics Inc. was formed by Dr. Maurice Moloney to commercialize his research in the Department of Biological Sciences at the University of Calgary. Specializing in plant physiology and cell biology, Dr. Moloney holds an industrial research chair in Plant Biotechnology. The company also calls upon the expertise of other research scientists, including Drs. Joe Boothe, Gijs van Rooijen, Vinod Kumar, and Larry Holbrook.

SMT HydraSil Inc.

Chief Executive Officer
William Deluce

Address
20 East Wilmot Street
Richmond Hill, Ontario
L4B 1C8

Telephone
(905) 707-0070

Fax
(905) 707-5877

Email
info@smthydrasil.com

Annual Revenue
Confidential

Number of Employees in Canada
10

Year Incorporated
1996

Principal Markets
North America

Industrial Sector
Manufacturing, Aerospace

Web Site
www.smthydrasil.com

Product or Service

SMT HydraSil Inc. is giving plastics a longer lease on life, improving products as diverse as raincoats and spacecraft components. SMT HydraSil commercializes a technique for strengthening polymer materials through a process called PhotoSil. This is no mere coating — it actually changes surfaces at the molecular level. PhotoSil is a radical extension of a process called silylation, previously impossible for all but a very few plastics. PhotoSil inserts hydrogen atoms on a polymer surface then replaces them with silicon atoms. The result is a material that is highly resistant to all kinds of weathering and degradation. The technique has almost infinite applications, from more-water-repellent raincoats and tents, to stronger finishes on cars. Spar Aerospace is using the technology to protect components of the Canadian remote manipulation system of the first International Space Station. HydraSil was acquired by Surface Modification Technologies in 1998.

NSERC Researcher

HydraSil was originally founded to commercialize research conducted by the Institute for Aerospace Studies (IAS) at the University of Toronto and Integrity Testing Labs Inc. The team was led by Dr. Rod Tennyson, a professor and director of the IAS. Dr. Tennyson receives NSERC research grants. The team is also supported by the Institute for Space and Terrestrial Science and the Ontario Centre for Materials Research. Dr. Tennyson is a member of the Intelligent Sensing for Innovative Structures Network of Centres of Excellence.

Stantec Consulting Ltd. (fka Pavement Management Systems)

Chief Executive Officer
Dr. Matt Karan
(Senior VP, Management Systems)

Address
152 Main Street
Cambridge, Ontario
N1R 6R1

Telephone
(519) 622-3005

Fax
(519) 622-2580

Email
itx.camb@stantec.com

Annual Revenue
$10,000,000

Number of Employees in Canada
80

Year Incorporated
1978/1996

Principal Markets
North America and International

Industrial Sector
Infrastructure, Transportation

Web Site
www.stantec.com

Product or Service

Stantec Consulting Ltd., Management Systems Market Segment, was formed in 1998 through the joining of Pavement Management Systems Limited (PMSL) and ITX Technologies Inc., firms both active in the field of infrastructure management. PMSL's proprietary technology had its genesis some twenty years ago in the university research of the company's founders and many of its employees and specializes in pavement engineering, the evaluation of road strength, drivability and surface condition. The pavement analysis system predicts which sections of road are most likely to deteriorate so that cost effective maintenance and repairs can be targeted to fix those sections before serious problems arise and more costly repairs are needed.

Seeing the need for this evaluation for other infrastructure components, in 1988 PMSL developed a spin-off group ITX Technologies Inc., and then became Stantec Management Systems, offering complete infrastructure management services for potable water, sanitary, stormwater, bridges, roads, right of way features, natural gas, etc. In addition, the combined firms offer maintenance management and geographic information system (GIS) integration.

NSERC Researcher

PMSL is a spin-off of research done at the University of Waterloo. Senior Vice-President of Stantec responsible for MSMS, Dr. Matt Karan, and Vice-President Dr. Frank Meyer did their doctoral theses under Dr. Ralph Haas. Dr. Haas is an expert in transportation engineering and planning, and receives NSERC research grants and a strategic grant. His current research involves pavement engineering and management technology. Graduates of the University of Waterloo comprise 25% of staff.

Sybase Waterloo (fka Watcom International)

Chief Executive Officer
Terry Stepian
(Senior Vice-President)

Address
415 Phillip Street
Waterloo, Ontario
N2L 3X2

Telephone
(519) 886-3700

Fax
(519) 747-4971

Email
investor_relations@sybase.com

Annual Revenue
N/A

Number of Employees in Canada
230

Year Incorporated
1981

Principal Markets
International

Industrial Sector
Information Technology

Web Site
www.sybase.com
www.sybase.ca

Product or Service

Sybase Waterloo was formerly WATCOM International Corporation, a spin-off from the University of Waterloo. In 1994, WATCOM merged with Powersoft Corp, which subsequently combined in 1995 with Emeryville, California-based Sybase, Inc., one of the largest global independent software companies.

The Sybase Waterloo facility employs 230 people and continues to be a hotbed of technological innovation. Sybase Waterloo is the main site of Sybase, Inc.'s newly formed Mobile and Embedded Computing Division with approximately 95% of its research and development team comprised of University of Waterloo graduates. Sybase's Mobile and Embedded Computing division is committed to helping organizations realize the promise of "information anywhere." Sybase's industry-leading mobile database solution, SQL Anywhere Studio, is designed to enable users to seamlessly synchronize data across the enterprise — from laptops, handheld computing devices and pagers to intelligent appliances.

NSERC Researcher

Members of the University of Waterloo's Computer Systems Group, headed by the late Dr. Wes Graham, established WATCOM, the predecessor of Sybase Waterloo. The Group's expertise enabled the WATCOM team to produce innovative software for the education market. Several members of the Computer Systems Group, including Dr. Graham and Dr. Donald Cowan, now a professor emeritus in the Department of Computer Science, received NSERC support through research grants.

Terry Stepien, the Senior Vice President and General Manager of Sybase's Mobile and Embedded Computing Division, was also a member of Waterloo's Computer Systems Group, where he held an adjunct faculty appointment in the Department of Computer Science.

Sysmon Corporation

Chief Executive Officer
Dr. Edward Speers

Address
3304 Assiniboine Ave.
Winnipeg, Manitoba
R3K 0B1

Telephone
(204) 837-3492

Fax
(204) 897-0973

Email
N/A

Annual Revenue
$150,000

Number of Employees in Canada
6

Year Incorporated
1992

Principal Markets
North America, India

Industrial Sector
Transportation, Safety

Web Site
N/A

Product or Service

When it comes to railway safety, this company is on the right track. Sysmon Corporation designs and manufactures acoustic emission monitoring systems that test welds in rail tracks for defects. Acoustic emission is a non-destructive monitoring technique that can locate flaws in welds and assess how damaged they are. The system can determine whether or not a weld is sound simply by "listening" to stress waves. Finding the bad welds early will make maintaining rail tracks more cost effective, saving railways money. And by repairing faulty welds before they become a problem, trains become an even safer, more reliable ride.

NSERC Researcher

Dr. Nabil Bassim is a professor in the department of mechanical and industrial engineering at the University of Manitoba and the president of Sysmon. He is a specialist in materials structures and properties. He invented the acoustic monitoring systems and is supported by NSERC research grants. Dr. Edward Speers is also a professor at the University of Manitoba.

TEKNA PLASMA SYSTÈMES INC.

CHIEF EXECUTIVE OFFICER
Dr. Maher Boulos

ADDRESS
3535 Industriel Boulevard
Sherbrooke, Quebec
J1L 1X7

TELEPHONE
(819) 820-2204

FAX
(819) 820-1502

EMAIL
tekna@tekna.qc.ca

ANNUAL REVENUE
Confidential

NUMBER OF EMPLOYEES IN CANADA
18

YEAR INCORPORATED
1990

PRINCIPAL MARKETS
International

INDUSTRIAL SECTORS
Plasma Technologies, Manufacturing Equipment

WEB SITE
www.tekna.qc.ca

PRODUCT OR SERVICE

Tekna Plasma Systems Inc. is a business operating under the licence of the University of Sherbrooke. Its role is to transfer technology from the university environment to industry. The company specializes in thermal plasma technologies and operates in collaboration with the Centre de recherche en technologie des plasmas (CRTP) at the University of Sherbrooke and McGill University. Tekna manufactures plasma systems for many uses, including the production of coatings and the fusion and densification of powders, as well as the synthesis of ultra-fine powders. Tekna Plasma's clients, which include General Electric, prefer these systems over traditional processes because they offer better reliability and quality control. Tekna is also recognized for its ability to adapt and optimize the design of these devices to client's needs. In addition, Tekna provides production infrastructure that allows its clients to optimize operating conditions on an industrial scale.

NSERC RESEARCHER

Dr. Maher Boulos founded Tekna Plasma to commercialize research results obtained at the CRTP in the Department of Chemical Engineering at the University of Sherbrooke. Dr. Boulos' research in thermal plasma technology is supported by NSERC research and equipment grants, and by FCAR, as well as by contracts from various industries in Canada, the United States and Europe.

TERRAGEN DIVERSITY INC.

CHIEF EXECUTIVE OFFICER
Dr. Mario Thomas

ADDRESS
300 – 2386 East Mall
Vancouver, British Columbia
V3T 1Z3

TELEPHONE
(604) 221-8896

FAX
(604) 221-8881

EMAIL
info@terragen.com

ANNUAL REVENUE
Confidential

NUMBER OF EMPLOYEES IN CANADA
34

YEAR INCORPORATED
1996

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Pharmaceuticals and Chemicals

WEB SITE
www.terragen.com

PRODUCT OR SERVICE

TerraGen Diversity Inc.'s unique process makes the most of untapped resources: dirt and uncultivable organisms such as lichens. TerraGen's technology extracts the genetic material of millions of bacteria and fungi in these environmental samples. Culturable microbes have been the basis for prescription drugs and industrial compounds for many years. Until now, 99% of microbes in the biosphere have been unexplored because they can't be cultured in the lab. TerraGen's innovative solution allows researchers to bypass the culturing process and reduce all the microbes in a soil sample, for example, to a rich gene soup. TerraGen's researchers then pull out potentially interesting genetic strands and plant them in host bacterial cells that are easy to manipulate. The properties of the recombinants are fully investigated for their production of low molecular weight biologicals and enzymes of potential use to industry; collections of strains are then provided to pharmaceutical companies for evaluation. So far, the company has found a number of molecules with antibiotic activity and has discovered new industrial enzymes that can be used for a variety of applications. TerraGen continues to screen DNA libraries from a variety of environmental sources in collaboration with industrial partners. TerraGen is owned in part by the University of British Columbia and the National University of Singapore and has received significant venture capital investment from sources in Canada, the USA, and Europe.

NSERC RESEARCHER

TerraGen Diversity was founded to commercialize the research of Dr. Julian Davies and his team in the Applied and Environmental Microbiology Group at the University of British Columbia. Dr. Davies is supported by NSERC research grants and is a member of the Canadian Bacterial Diseases Network.

THERMO DYNAMICS LTD.

CHIEF EXECUTIVE OFFICER
Dr. Peter Allen

ADDRESS
44 Borden Avenue
Dartmouth, Nova Scotia
B3B 1C8

TELEPHONE
(902) 468-1001

FAX
(902) 468-1002

EMAIL
solarinfo@thermo-dynamics.com

ANNUAL REVENUE
$800,000

NUMBER OF EMPLOYEES IN CANADA
7

YEAR INCORPORATED
1981

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Energy, Environmental Technologies

WEB SITE
www.thermo-dynamics.com

PRODUCT OR SERVICE

Thermo Dynamics Ltd. is a company with a very bright product — it markets the sun. A leader in solar technology, the company sells solar-powered heaters in North America, Europe, Africa, and New Zealand. The heaters reduce domestic water heating costs by as much as 65%. The system is non-polluting and uses only non-toxic heat transfer solutions in its design. Novel features of the Thermo Dynamics solar water heater include a high-performance natural convection heat exchanger, photovoltaic power pump, and metallurgically bonded aluminum-copper solar absorber fins.

NSERC RESEARCHER

Thermo Dynamic's founder is Dr. Peter Allen, a mechanical engineering professor at DalTech, (previously the Technical University of Nova Scotia). Dr. Allen has worked in the solar-energy industry for more than 15 years and is a world leader in solar technology. He has received several NSERC research grants. His current research is in the field of natural convection heat transfer, which is also supported by a research grant.

TIR Systems Inc.

Chief Executive Officer
John D. Mingay

Address
3350 Bridgeway Street
Vancouver, British Columbia
V5K 1H9

Telephone
(604) 294-8477

Fax
(604) 294-3733

Email
caren_holtby@tirsys.com

Annual Revenue
$4,000,000

Number of Employees in Canada
25

Year Incorporated
1982

Principal Markets
North America, Europe, Asia

Industrial Sector
Transportation, Infrastructure

Web Site
www.tirsys.com

Product or Service

Move over light bulbs, here come Light Pipes. This new method of illumination, manufactured and marketed by TIR Systems Inc., was developed at the University of British Columbia. Light Pipes can be found on skyscrapers in New York City and Toronto, and in more than 1,000 other commercial, scientific, and recreational facilities around the world. The key to the technology is total internal reflection — a pattern of prisms that coat the pipe, reflecting and moving the light so that its source can be remote from the illuminated area. Light Pipes are ideal for places that are inaccessible or for areas where conventional lighting (and the electricity that goes with it) may be dangerous. The installation costs are competitive with standard commercial fixtures and the system provides maintenance savings up to 75% over conventional lighting systems.

TIR provided the lighting system for the two-mile-long Prudential Tunnel in Boston. The company has supplied tunnel lighting products for the Tunel de la Loma Larga, the first vehicular tunnel in Monterrey Mexico.

NSERC Researcher

The inventor of Light Pipes, Lorne Whitehead, is a physics professor at the University of British Columbia. Dr. Whitehead received support for the development of the Light Pipes prototype through an NSERC grant. He currently holds an NSERC industrial research chair in Surface Physics co-sponsored by 3M Canada and the University of British Columbia.

TurboSonic Inc.
(FKA Turbotak Technologies Inc.)

Chief Executive Officer
Edward Spink

Address
550 Parkside Drive, Suite A14
Waterloo, Ontario
N2L 5V4

Telephone
(519) 885-5513

Fax
(519) 885-6992

Email
info@turbosonic.com

Annual Revenue
$4,100,000

Number of Employees in Canada
22

Year Incorporated
1976

Principal Markets
North America

Industrial Sector
Environment, Manufacturing

Web Site
www.turbosonic.com

Product or Service

TurboSonic has applied its proprietary technology to a wide variety of air pollution control problems for industries ranging from pulp and paper, wood products, mining, non-ferrous metallurgical, iron and steel, chemical, food and beverage, waste processing, hazardous and municipal solid waste (MSW) incineration, power generation, automotive, cement, as well as general manufacturing. The TurboSonic SO_2 Removal and Recovery Process utilizes Dow Chemical's proprietary amine-based sorbent to remove and recover SO_2 emissions. The recovered pure SO_2 can be processed to produce liquid SO_2, sulfuric acid or elemental sulfur, depending on market demand. This technology reduces waste and provides economic return, while meeting regulatory requirements. The Turbotak Scrubber removes solid, liquid and gaseous contaminants from process exhaust streams at higher efficiencies and lower operating costs than "conventional" equipment. The TurboSonic West Electrostatic Precipitator achieves high efficiency sub-micron particulate capture (including heavy metals) at lower energy consumption than wet scrubbing. TurboSonic Evaporative Gas Cooling Systems control temperature and humidity of process gases and enhance air pollution control efficiencies. TurboSonic Dust Suppression Systems control dust arising from material handling with TurboSonic Nozzles. TurboSonic is a leader in dust control with its engineered systems controlling virtually all types of respirable and larger size fugitive dust. This group of products represents economic and technical advantages over conventional equipment and are designed to meet the strictest emission regulations.

NSERC Researcher

TurboSonic was founded by Dr. Don Spink, a chemical engineering professor at the University of Waterloo. His research has been supported by NSERC through several strategic grants, research grants, and a collaborative research and development grant with Stelco Ltd. in the early 1980s.

UNIVERSAL SYSTEMS LTD.

CHIEF EXECUTIVE OFFICER
Dr. Salem Masry

ADDRESS
264 Rookwood Ave.
Fredericton, New Brunswick
E3B 2M2

TELEPHONE
(506) 458-8533

FAX
(506) 459-3849

EMAIL
info@universal.ca

ANNUAL REVENUE
$8,000,000 (1998 estimate)

NUMBER OF EMPLOYEES IN CANADA
70

YEAR INCORPORATED
1979

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Mapping and Surveying

WEB SITE
www.universal.ca

PRODUCT OR SERVICE

Universal Systems has been developing and providing spatial information and GIS solutions for marine and land-based industries for almost 20 years. Over the years, the company has developed a comprehensive set of software products with clients in 54 countries in over 30 different disciplines.

The company's flagship product, CARIS, operates under Microsoft Windows NT, Windows 95, and UNIX operating systems. Typical users are: mining and geological organizations, hydrographic offices, port management authorities, municipalities, topographic mapping and cadastral (property mapping) agencies, forestry companies, etc.

Incorporated in 1979, Universal Systems is a 100% Canadian-owned company. Its global headquarters are located in Fredericton, New Brunswick, with a subsidiary office in The Netherlands. The company has a network of over 40 partners in 38 countries that provide CARIS solutions, integration, training, and support.

NSERC RESEARCHER

Universal Systems Ltd. was founded by Salem Masry, former professor of geodesy and geomatics engineering at the University of New Brunswick. Dr. Masry helped to found the Digital Mapping Laboratory at UNB in the 1980's. NSERC supported Dr. Masry's research through operating and equipment grants.

VENMAR CES (FKA CONSERVATION ENERGY SYSTEMS)

CHIEF EXECUTIVE OFFICER
Luc Janelle

ADDRESS
2525 Wentz Avenue
Saskatoon, Saskatchewan
S7K 2K9

TELEPHONE
(306) 242-3663

FAX
(306) 242-3484

EMAIL
customerservice@venmarvent.com

ANNUAL REVENUE
Confidential

NUMBER OF EMPLOYEES IN CANADA
60

YEAR INCORPORATED
1980

PRINCIPAL MARKETS
North America

INDUSTRIAL SECTOR
Commercial, Residential, & Institutional Ventilation Systems

WEB SITE
www.venmarvent.com

PRODUCT OR SERVICE

Commercially successful heat exchanger technology for the agricultural market has had equal success in homes, offices, schools, malls, hospitals, and restaurants. The innovative heat exchanger was developed at the University of Saskatchewan and first applied to livestock barns (see DEL-AIR Systems). Now another company, Venmar CES (formerly known as Conservation Energy Systems), produces ventilation and heat exchanger systems for homes and businesses and markets its products throughout North America. The polypropylene core is easy to make, corrosion resistant, and easy to clean. Consequently, manufacturing and maintenance costs are lower than those of conventional heat exchangers. Three energy technologies are now available: the flat plate heat exchanger, the enthalpy wheel, and the heat pipe system.

In 1992, Conservation Energy Systems Inc. was acquired by Saskatoon-based Venmar Ventilation.

NSERC RESEARCHER

Robert Besant's research on heat exchangers began as a project based at the University of Saskatchewan and funded by an NSERC Strategic Grant. Dr. Besant has held several NSERC grants. He is currently investigating ways to sustain high-quality granular fertilizers during storage, handling, and shipment. This work is funded by an NSERC collaborative research and development grant, co-sponsored by the Potash Corporation of Saskatchewan. Dr. Besant also receives NSERC research grants.

Virtek Vision International Inc.

Chief Executive Officer
Mr. Jim Crocker

Address
785 Bridge Street
Waterloo, Ontario
N2V 2K1

Telephone
(519) 746-7190

Fax
(519) 746-3383

Email
jhussey@equicomgroup.com

Annual Revenue
$7,500,000

Number of Employees in Canada
52

Year Incorporated
1986

Principal Markets
North America, Europe, Pacific Rim

Industrial Sector
Manufacturing, Construction, Aerospace

Web Site
www.virtek.ca

Product or Service

Virtek Vision International is a world leader in the development and application of precision laser systems to enhance manufacturing processes by increasing throughput, improving quality and reducing costs. Virtek's products are used for 3D templating applications in pre-fabricated construction and aerospace, plus imaging of 2D parts for quality inspection and reverse engineering. By integrating lasers, computer software, and computer hardware, Virtek supplies highly defined and specialized products that address industry-specific problems. Virtek specializes in the development and commercialization of systems incorporating laser, complex computer algorithms, and personal computers. In general, Virtek's products help to increase production yields from expensive and/or unwieldy materials and to reduce costly set-up and changeover times. Virtek maintains a highly qualified research and development team, whose members are responsible for the continuing development of innovative software solutions and technical engineering advancements. Products include Virtek LaserEdge™ for composite material parts manufacturing in the aerospace industry, Virtek TrussLine™ for roof fabrication in the housing construction industry, Virtek LeatherCam in the leather goods industry, and LaserQC in the parts inspection industry.

NSERC Researcher

Two of Virtek's founders, Andrew Wong and Mohamed Kamel, are professors in the Pattern Analysis and Machine Intelligence Laboratory, Department of Systems Design Engineering, University of Waterloo. Their research has been supported by a variety of NSERC grants.

VORTEK INDUSTRIES LTD.

CHIEF EXECUTIVE OFFICER
Reg Allen

ADDRESS
1820 Pandora Street
Vancouver, British Columbia
V5L 1M5

TELEPHONE
(604) 251-2451

FAX
(604) 251-3356

EMAIL
mailbox@vortek.com

ANNUAL REVENUE
Confidential

NUMBER OF EMPLOYEES IN CANADA
25

YEAR INCORPORATED
1976

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Manufacturing Equipment

WEB SITE
www.vortek.com

PRODUCT OR SERVICE

With clients like NASA, IBM, Siemens, Motorola, Boeing, Honeywell, and Sumitomo, Vortek Industries Ltd. must be doing something right. The British Columbia company develops and manufactures ultrapowerful arc lamps that radiate higher heat flux more efficiently than any other device. The Vortek technology was developed at the University of British Columbia. The aerospace industry employs the lamps to test materials for heat resistance, NASA uses the lamps to simulate the effects of the sun on the space shuttle, and the semiconductor industry uses them to process advanced materials for solar cells and integrated circuit manufacture.

NSERC RESEARCHER

Vortek Industries is the brainchild of physics professors Roy Nodwell and David Camm at the University of British Columbia. Drs. Nodwell and Camm both received NSERC grant support. Dr. Nodwell participated in a group research grant to study laser fusion and applied plasma physics. Dr. Camm participated in a strategic grant in advanced materials research at high temperature and high pressure.

WATERLOO MAPLE INC.

CHIEF EXECUTIVE OFFICER
Ian Suttie

ADDRESS
57 Erb Street West
Waterloo, Ontario
N2L 6C2

TELEPHONE
(519) 747-2373

FAX
(519) 757-5284

EMAIL
info@maplesoft.com

ANNUAL REVENUE
Confidential

NUMBER OF EMPLOYEES IN CANADA
100

YEAR INCORPORATED
1988

PRINCIPAL MARKETS
International

INDUSTRIAL SECTOR
Education, Industrial, Software

WEB SITE
www.maplesoft.com

PRODUCT OR SERVICE

Waterloo Maple is a world leader in developing mathematical and analytical software. Its core technologies were originally built upon world-class research in symbolic mathematics at the University of Waterloo. Its flagship product, Maple V, embodies advanced technology for solving a wide range of mathematical problems encountered in modeling and simulation, and technical education. Over a million users have adopted Waterloo Maple products as their preferred software. Its corporate headquarters are located in Waterloo, Ontario.

NSERC RESEARCHER

Waterloo Maple was co-founded by University of Waterloo computer science professors Drs. Keith Geddes and Gaston Gonnet. Dr. Geddes' expertise lies in computing methods and mathematics of computing. He has received numerous NSERC grants since the late 1970s. Dr. Gonnet has similar research interests and has been supported with NSERC strategic and research grants since the early 1980s.

WaveCom Electronics Inc.

Chief Executive Officer
Dr. Surinder Kumar

Address
222 Cardinal Crescent
Saskatoon, Saskatchewan
S7L 6H8

Telephone
(306) 955-7075

Fax
(306) 955-9919

Email
sales@wavecom.ca

Annual Revenue
$14,100,000

Number of Employees in Canada
155

Year Incorporated
1988

Principal Markets
International

Industrial Sector
Communications Technologies

Web Site
www.wavecom.ca

Product or Service

For high-tech communication systems, many companies turn to Saskatchewan's WaveCom Electronics Inc. WaveCom manufactures frequency translators for Internet on cable systems, 64 QAM modulators for video on demand on cable, spread spectrum radios, a complete family of analog cable TV headend products and the microwave subsystems for MMDS and LMDS applications.

WaveCom has manufactured and supplied products for a variety of customers, including Bay Networks, CISCO Systems, Zenith, Andrew Corporation, Rogers, Shaw, IPC, and Diva Systems. The corporate mandate of WaveCom Electronics is to be a leading designer of state-of-the-art communications products. Its products are sold worldwide and are recognized for high quality.

NSERC Researcher

WaveCom Electronics Inc. was founded by Surinder Kumar, a former electrical engineering professor at the University of Saskatchewan. Dr. Kumar has received many NSERC research grants. He held the S.L. Buckwold Industrial Research Chair in Communications Studies from 1986 through 1997. His latest research involved the study of receivers, direct modulators, and linearizers for digital mobile radios, and LMDS and MMDS.

Wavemakers Research

Chief Executive Officer
Alex Morton
(v.p., corporate development)

Address
3328 West 2nd Avenue
Vancouver, British Columbia
V6R 1J1

Telephone
(604) 730-0134

Fax
(604) 730-0136

Email
info@wavemakers.com

Annual Revenue
Confidential

Number of Employees in Canada
9

Year Incorporated
1993

Principal Markets
International

Industrial Sector
Speech Recognition, Video Conferencing, Technology for Toys and Games

Web Site
www.wavemakers.com

Product or Service

In 1994, Wavemakers Research was selected by Foreign Affairs Canada as the up-and-coming company of the year. It's easy to see why. Using leading Canadian neuroscience research conducted at the University of British Columbia, the company has developed software that "hears." Wavemakers' powerful software technology instantly and accurately identifies the exact location and source of a sound, including the identity of the speaker. The software filters out all other sounds, and passes the information to other software programs where it can be processed for a myriad of uses, including video conferencing equipment, toys and games, hearing assistance devices, and surveillance and security. WaveMakers is currently developing "far field" technology that will eliminate the need for headset-mounted microphones for speech recognition.

NSERC Researcher

Wavemakers' Vice-president, Max Cynader, is one of Canada's leading neuroscientists. He has received numerous awards and recognition for his pioneering work in brain function. Dr. Cynader is a fellow of the Royal Society of Canada and a fellow of the Canadian Institute for Advanced Research. He has received NSERC funding for more than twenty years, as well as funding from private companies including Allergan, Alcon, and Glaxo. Dr. Cynader is a professor in the department of opthalmology at the University of British Columbia and the director of the Brain and Spinal Cord Research Centre at the Vancouver Hospital and Health Sciences Centre.

With more than 10 years of experience in the acoustics field, Wavemaker's Presiden, Pierre Zakarauskas, is an expert in his field and has published extensively in leading journals. Dr. Zakarauskas is also a proud recipient of NSERC's prestigious 1967 science and engineering scholarship.

Westport Innovations Inc.

Chief Executive Officer
David Demers

Address
1691 West 75th Avenue
Vancouver, British Columbia
V6P 6P2

Telephone
(604) 718-2000

Fax
(604) 718-2001

Email
info@westport.com

Annual Revenue
N/A

Number of Employees in Canada
55

Year Incorporated
1995

Principal Markets
North/South America, Europe,Asia

Industrial Sector
Environmental Tech, Automotive

Web Site
www.westport.com

Product or Service

Performance, reliability and efficiency are the hallmark characteristics that make diesel engines the power source of choice for trucks, buses, ships, locomotives and generators world wide. But their pollutant emissions harm our environment, health and global economy. Vancouver-based Westport Innovations Inc. is commercializing technology that allows diesels to run on clean-burning natural gas. Westport's High Pressure Direct Injection (HPDI) technology maintains the high efficiency and performance of diesels while drastically reducing particulate matter (soot), smog-causing emissions of nitrogen oxides as well as greenhouse gases. HPDI has been tested successfully on transit buses in Canada and California. Westport engineers are working with Original Equipment Manufacturers (OEMs) to adapt the technology to other heavy duty applications and automobiles. Westport has a joint project agreement with Cummins Engine Company, the world's largest producer of diesel engines over 200 horsepower. In June 1999, Westport announced a research and development program with Ford Motor Company.

NSERC Researcher

Dr. Philip Hill is a professor emeritus of mechanical engineering at the University of British Columbia. A specialist in thermodynamics and combustion, his research has been supported by NSERC research, strategic, and equipment grants. His technology was licensed in 1994, resulting in the formation of Westport Innovations Inc.

Wi-LAN Inc.

Chief Executive Officer
Dr. Hatim Zaghloul

Address
801 Manning Road N.E., Suite 300
Calgary, Alberta
T2E 8J6

Telephone
(403) 273-9133

Fax
(403) 273-5100

Email
wi-lan@wi-lan.com

Annual Revenue
$5,324,776

Number of Employees in Canada
65

Year Incorporated
1992

Principal Markets
International

Industrial Sector
Communications

Web Site
www.wi-lan.com

Product or Service

Wi-LAN Inc. designs and markets innovative, leading-edge wireless data communications technology, providing high-speed data networking products to people in more than 30 countries on six continents. The Hopper wireless modem and Hopper Plus wireless Ethernet bridge from Wi-LAN feature consistent high performance, easy installation and superior quality at significantly lower costs than traditional wire-based networking alternatives. Built using Wi-LAN's patented spread spectrum technology, Hopper products can be used almost anywhere. Services such as high-speed Internet connectivity or LAN/WAN extensions are easily delivered through Hopper Plus wireless Ethernet bridges, and Wi-LAN's Hopper modems can be used for remote monitoring in many circumstances, such as to control traffic or regulate pumps in the oil and gas sector.

Products in the Hopper family are designed for use in the unlicensed ISM (Industrial, Scientific and Medical) radio band, meaning no additional fees for the user. Hoppers can also be configured for use in licensed bands. Wi-LAN agreed to license its patented W-OFDM technology to all interested parties on fair, reasonable and non-discriminatory terms in July 1998, in response to the unanimous passing of the IEEE 802.11a draft standard. Wi-LAN trades on the ASE under the symbol WIN.

NSERC Researcher

Wi-LAN Inc. was founded by Drs. Hatim Zaghloul and Michel Fattouche after the long-time friends developed a new wireless technology called Wide-band Orthogonal Frequency Division Multiplexing (W-OFDM). The partners negotiated for patent rights with AGT Ltd. (now TELUS Corp.), where Dr. Zaghloul was working as a senior researcher. Drs. Zaghloul and Fattouche hold two joint patents as well as individual patents for leading-edge technological breakthroughs. Dr. Zaghloul currently serves as President and CEO of Wi-LAN. Dr. Fattouche sits on the Board of Directors of Wi-LAN and is President of Cell-Loc, an affiliate of Wi-LAN. He is a dedicated researcher and associate professor in the Department of Electrical and Computer Engineering at the University of Calgary. A former NSERC senior industrial fellow, Dr. Fattouche's research is supported by NSERC research grants. Dr. Zaghloul was a recipient of an NSERC postgraduate scholarship.

ZENON Environmental Inc.

Chief Executive Officer
Dr. Andrew Benedek

Address
845 Harrington Court
Burlington, Ontario
L7N 3P3

Telephone
(905) 639-6320

Fax
(905) 639-1812

Email
mstadnyc@zenonenv.com

Annual Revenue
$58,000,000

Number of Employees in Canada
400

Year Incorporated
1980

Principal Markets
International

Industrial Sector
Potable & Waste Water Treatment, Water Reuse (Municipal)

Web Site
www.zenonenv.com

Product or Service

ZENON is a world leader in providing membrane-based separation products and services for water purification, process separation and wastewater treatment and water reuse applications. The ZENON group of companies operate from six locations in North America and four in Europe. ZENON's products and services are marketed for a variety of industrial, institutional and government applications world wide through our offices and representatives.

ZENON specializes in membrane technologies (such as reverse osmosis, nanofiltration, ultrafiltration and microfiltration) to purify, separate, concentrate or recycle water and waste. Zenon also uses many complementary processes such as ion exchange, adsorption and biodegradation to satisfy clients' requirements. It has thousands of installations world wide that purify, treat or recycle water from municipalities and all types of industries. The company also has a large number of units providing water for the army and the navy.

ZENON's quality assurance programs meet the highest international standards for the industry. Customer support is provided by an experienced service department and an application engineering group.

ZENON frequently works in partnership with our clients to develop new technological solutions. The company also partners with complementary businesses around the world, as appropriate, to serve clients world wide.

NSERC Researcher

ZENON's founder is Dr. Andrew Benedek, a former chemical engineering professor at McMaster University. NSERC supported his early investigations with research grants.